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IMPROVEMENTS TO THE PANAMA CANAL

REPORT

TO THE

COMMITTEE ON MERCHANT MARINE AND FISHERIES

HOUSE OF REPRESENTATIVES
UNITED STATES CONGRESS

ON THE

SHORT-RANGE PROGRAM

FOR

IMPROVEMENTS TO THE PANAMA CANAL

(Pursuant to H. Res. 149, 85th Congress)

(85th Congress, 1st Session)

JULY 15, 1958

BOARD OF CONSULTANTS
ISTHMIAN CANAL STUDIES

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LETTER OF SUBMITTAL

BOARD OF CONSULTANTS,
ISTHMIAN CANAL STUDIES,
July 15, 1958.

Hon. HERBERT C. BONNER,
Chairman, Committee on Merchant Marine and Fisheries,
House of Representatives, Washington, D. C.

DEAR MR. BONNER: Pursuant to authority granted by House Resolution 149, 85th Congress, adopted February 27, 1957, the Committee on Merchant Marine and Fisheries of the United States House of Representatives appointed a Board of Consultants on the Isthmian Canal Studies to investigate and study the operation, construction, improvements, and other matters relating to the Panama Canal. As its first assignment, the board of consultants has made an investigation and study of the short-range improvement program to the Panama Canal, dated 1957, prepared by the Panama Canal Company, and the board now submits its report thereon, together with its conclusions and recommendations.

CONCLUSIONS

Based upon an investigation and study of the facts developed in the Short Range Study Report of 1957 of the Panama Canal Improvements, the board of consultants has concluded—

(1) That the present capacity of the Panama Canal is 28 lockages per 24-hour day with the Gatun locks being overhauled and with 3 clearcut ships passing through the canal. This capacity is increased to 29 lockages per 24-hour day with only 2 clearcuts, and to 30 lockages per 24-hour day with no clearcuts. (This opinion is based upon the facts contained in the Short Range Study Report of 1957.)

(2) That during the fiscal years 1955 and 1956 the number of oceangoing ships arriving for transit through the Panama Canal has varied from a minimum of 12 to a maximum of 38 ships per day. Holdovers, thus causing delays in shipping, were necessitated on the maximum days.

(3) That the operation of the Panama Canal from 1946 through 1956 showed an increase of 395 transits per year; and since 1956 a constant growth rate of increase of 250 transits per year has taken place.

(4) That the number of oceangoing ships to transit the Panama Canal for the fiscal years 1956 through 1961 is estimated in appendix A of the Short Range Study Report of 1957 to be—

1956	8,475	1959	8,750
1957	8,605	1960	8,850
1958	8,660	1961	8,950

(5) That the estimated projected "required lockage capacity" is as follows:

1961: 31 lockages	3 daylight clearcuts.
1966: 33 lockages	3 daylight clearcuts.
1971: 35 lockages	4 daylight clearcuts.
1976: 36 lockages	5 daylight clearcuts.

(6) That the "deficiency in lockage capacity," based upon present conditions, during periods of overhaul of the Atlantic locks, projected into the future is as follows:

1961	3 lockage deficits.	1971	7 lockage deficits.
1966	5 lockage deficits.	1976	8 lockage deficits.

(Lockage capacity is described as a unit of canal capacity.)

(7) The projects for a short-range improvement program, as contained in the 1957 report, are necessary for immediate construction as follows:

Project D: Improved lighting at the locks, and through Gaillard Cut	$1, 550, 000
Project E: Mooring facilities north of Pedro Miguel locks	1, 359, 000
Project F–1: Widening the Paraiso-Cucaracha reaches of the canal	11, 609, 000
(Excluding project B: Bend 1868. Sufficient funds are already appropriated for project B.)	
Project G: Widening Bend 1660	4, 438, 000
Total estimated cost involved in the short-range program	18, 956, 000

(All of these estimated cost figures are those of the Panama Canal Company.)

The following projects have already been authorized and budgeted:

Project A: The enlargement and deepening of the Cristobal Anchorage.

Project B: The widening of Bend 1868 to 500 feet.

Project C: The purchase of additional towing locomotives.

(8) That the Panama Canal Company estimates funds in the amount of approximately $19 million will be available for these short-range improvements from fiscal year 1959 through fiscal year 1962, from the normal source of revenue of the Panama Canal Company without congressional appropriations.

(9) That the short-range improvement program is necessary in order to increase the capacity of the canal, reduce operational hazards and to make possible the operation of the canal on the basis of a 24-hour day.

RECOMMENDATIONS

(1) Based upon the investigation and study and the conclusions set forth above, the board of consultants recommends that approval and support be given to the program of the Panama Canal Company for the short-range improvements as listed below:

Project D: Improved lighting at the locks and through Gaillard Cut.

Project E: Mooring facilities north of Pedro Miguel locks.

Project F–1: Widening the Paraiso-Cucaracha Reaches of the canal.

Project G: Widening Bend 1660 in the canal.

(2) The board of consultants recommends, as soon as the improvements outlined above have progressed to the point where 24-hour operation is feasible, that the Panama Canal be prepared and authorized to operate on a 24-hour-day basis, whenever 24-hour operation is required to handle the traffic load.

(3) The board of consultants recommends that the Engineering and Operation Division of the Panama Canal Company give further study to the problem involving "towing locomotives."

(4) The board of consultants recommends that consideration should soon be given to deepening the existing 300-foot width of the present canal in the Cucaracha-Paraiso Reaches and at Bend 1660 by 3 additional feet from the present bottom elevation of 40 to a new bottom elevation of 37, provided funds can be made available for this work. (The presently contemplated short-range program provides for the proposed 200-foot widened portion of the canal to be excavated down to a bottom elevation of 37.) Your board of consultants, however, suggests that any decision on deepening the canal be withheld, pending the results of the tests now being conducted at the David Taylor Model Basin, Carderock, Md. These experiments are being carried out under contract with the United States Navy for the Panama Canal Company on "maneuverability of deeply laden vessels in a channel with 3-foot difference in depth."

(5) When this short-range program is completed, the Cucaracha-Paraiso, Bend 1868, Culebra, Bend 1660, and the Chagres Crossing Reaches, of the Panama Canal through the Gaillard Cut will have been widened to 500 feet. The Empire, Las Cascadas, and Bas Obispo will then be the only reaches in the Gaillard Cut between Pedro Miguel and Gamboa which will be 300 feet wide. Your board of consultants recommends that further study be made by the Panama Canal Company of the cost of widening the Empire, Las Cascadas, and Bas Obispo Reaches to 500 feet, and the cost of deepening all reaches of the canal through Gaillard Cut.

SCOPE OF INVESTIGATION AND STUDY

The board of consultants has examined and studied the reports relating to the short-range program of 1957 for improvements to the Panama Canal, and it has reviewed the statements of the Governor of the Panama Canal Zone and others who appeared before the Committee on Merchant Marine and Fisheries at a hearing held on April 16, 1958. The board made an inspection of the facilities of the Panama Canal during the period March 17–21, 1958. Due to long standing engagements, General Groves was unable to make this trip. However, he had made a number of previous visits to Panama, and his knowledge of the canal made it possible for him to participate fully in this report. The board furthermore studied in part the report of the Governor of the Panama Canal, made in 1946, under Public Law 280, 79th Congress, 1st session. The scope of the work of the board of consultants in the course of its investigation and study, however, has not included detailed calculations of quantities and the determination of unit prices which are used in the construction cost estimates prepared by the Panama Canal Company.

The main body of this report contains facts relating to design, construction and operation of the Panama Canal, together with basic engineering data and cost estimates used in connection with the study of the short-range-construction program. The merits of the short-range program, as contained in the 1957 report of the Panama Canal Company, are discussed and facts bearing upon the problem are presented. This report also contains 13 exhibits which illustrate the projects included in the program. Particular attention is called to Exhibit No. 1, Map of Panama Canal; to Exhibit No. 2, Profile of Panama Canal; and to Exhibit No. 3, Cross Section Through Panama Canal.

ACKNOWLEDGMENTS

The board of consultants acknowledges and expresses appreciation for the excellent cooperation given to the board by Maj. Gen. W. E. Potter, Governor of the Canal Zone, on the inspection trip of the board to Panama; and also to Bernard J. Zincke, Esq., for his efficient and constant cooperation in connection with the development of this report. The board is grateful for this assistance.

Respectfully submitted.

BOARD OF CONSULTANTS ISTHMIAN CANAL STUDIES,
FRANCIS S. FRIEL.
LESLIE R. GROVES.
E. SIDNEY RANDOLPH.
Dr. HARTLEY ROWE.
JOHN E. SLATER.
(Signed) S. C. Hollister,

Dr. S. C. HOLLISTER,
Chairman, Board of Consultants, Isthmian Canal Studies.

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IMPROVEMENTS TO THE PANAMA CANAL

Section 1. Authorization

The Committee on Merchant Marine and Fisheries of the House of Representatives of the United States Congress, under authority of House Resolution 149, 85th Congress, adopted February 27, 1957, retained a board of consultants to study the present and future operational, construction, and other problems relating to the Panama Canal. The Board of Consultants on the Isthmian Canal Studies comprise—

Dr. S. C. Hollister, dean, College of Engineering, Cornell University, Ithaca, N. Y. (chairman of board).

Lt. Gen. Leslie R. Groves (U. S. A., retired), wartime head of the Manhattan project, which developed the atomic bomb; served on Nicaraguan Canal survey, 1929–31; vice president of Remington-Rand Division, Sperry Rand Corp., Norwalk, Conn.

E. Sidney Randolph, consulting engineer, Baton Rouge, La., who was employed for 35 years on the Panama Canal.

E. H. Rowe, Boston, Mass., formerly vice president of the United Fruit Co., and who was employed on the design and construction of the Panama Canal.

John E. Slater, member of the consulting engineering firm of Coverdale & Colpitts of New York City, and one-time president of the American Export Lines.

Francis S. Friel, president of Albright & Friel, Inc., consulting engineers, Philadelphia, Pa., and vice president of the American Society of Civil Engineers.

Section 2. Scope of This Report

This report of the Board of Consultants on the Isthmian Canal Studies embraces a study and review of the Short Range Study Report of 1957 of a recommended program for improvements to the Panama Canal, consisting of—

Project D: Improved lighting at the locks and Gaillard Cut.

Project E: Mooring Facilities North of Pedro Miguel Locks.

Project F–1: Widening the Paraiso-Cucaracha Reaches, excluding project B.

Project G: Widening Bend 1660.

Section 3. The Existing Panama Canal

(1) *Description of the Panama Canal.*—In passing through the Panama Canal from the Atlantic to the Pacific, a ship first enters Limon Bay from the Caribbean Sea. The old cities of Colon and Cristobal are located at the Atlantic end of the canal. After transiting

the breakwater and a large harbor in Limon Bay, a ship enters Gatun locks, which raise it from the water level in the Atlantic Ocean to the water level in Gatun Lake. After traversing Gatun Lake, a ship then enters a gorge through the Continental Divide, formerly known as the Culebra Cut, but now identified as the Gaillard Cut. At the south end of this cut, a vessel enters the single lift Pedro Miguel locks, and is locked down to the intermediate level of Miraflores Lake. It then passes through the lake to Miraflores locks, where it is again locked down in two steps to the level of the bay of Panama on the Pacific side. Gatun Lake has a regulated water surface ranging between elevation 82 and elevation 87 above mean sea level. This lake is maintained at its high level by the Gatun locks and dam on the north, and by the Pedro Miguel locks and dam on the south. The regulated water level in Miraflores Lake at elevation 54 is retained by the Miraflores locks and dam. Immediately to the south of Miraflores locks is Balboa Harbor and the Pacific entrance of the bay of Panama. The city of Balboa is located on Balboa Harbor, and the city of Panama faces the bay of Panama.

(2) *The tides in the Atlantic and Pacific.*—The tides on the Pacific side at Balboa have a maximum range of approximately 20 feet; while the tidal range at Cristobal on the Atlantic side is only about 2 feet. This is the maximum range between successive high and low tides. The mean tidal range on the Pacific side is 12.6 feet; while on the Atlantic side it is 0.9 foot. The highest recorded tide at Balboa is at elevation 11.53; while at Cristobal it is at elevation 1.8. The lowest recorded tide on the Pacific side is at elevation minus 11.16 feet, and on the Atlantic side it is at elevation minus 1.25 feet (tidal data from 1947 report of Isthmian Canal studies).

(3) *Description of locks.*—All locks on the Panama Canal are in duplicate with a common center wall. Gatun locks have 3 lifts; Pedro Miguel locks, 1 lift; and Miraflores locks, 2 lifts. The vertical locking distance in each chamber varies from 27 to 33 feet. Each set of locks is 110 feet wide by 1,000 feet long. The upper and lower gates of the upper chambers of each lock are in pairs, and are protected from damage by a vessel by fender chains, which extend across the lower end of the locks. All of the other locks have single gates. All vessels are towed through the locks by electric locomotives known as "mules."

(4) *Gatun, Miraflores, and Madden Dams.*—On the Atlantic side, Gatun Dam is an earth structure with a concrete spillway equipped with regulating gates. At the crest of the dam, the lake which is formed by Gatun Dam, has a surface area of 163.5 square miles, and it forms the waterway (elevation 82 to 87) between Pedro Miguel and Gatun locks. Miraflores Lake, which lies between Pedro Miguel and Miraflores locks, is retained at an elevation of 54 feet above sea level by the Miraflores Dam, which consists of an earth structure with a concrete spillway equipped with regulating gates, and located at the Miraflores locks. The gates on this dam control the water level in Miraflores Lake. Madden Dam is a concrete gravity structure built across the Chagres River upstream from Gatun Lake. This dam forms the Madden Lake, which impounds water for the dry season operation of the canal and it controls floods in the upper Chagres during the rainy season. The normal operating water level in Madden Lake is at elevation 240 above sea level. A hydroelectric generating

station is located at Madden Dam, and it is the main source of power for the Canal Zone. Hydroelectric power is also generated in the Gatun Dam.

(5) *The Canal Zone and profile along the canal.*—(*a*) Exhibit No. 1, included in this report, is a map of the Canal Zone prepared in 1957, and which is included in the Short Range Study Report of the Panama Canal improvements. Exhibit No. 2 is a profile along the existing Panama Canal, showing the water levels in the Atlantic and Pacific; the water levels in Gatun and Miraflores Lakes; the bottom of the canal, together with the surface of the ground along the route of the canal prior to its construction.

(*b*) The Panama Canal Zone is a strip across the isthmus, extending approximately 5 miles on each side of the centerline of the canal. The zone also includes the areas contained within elevation 100 feet above sea level around Gatun Lake. (Water level of Gatun Lake ranges from elevation 82 to 87.) The water level in Madden Lake is operated at a normal water level of elevation 240, and the Canal Zone around Madden Lake extends to elevation 260.

Section 4. The Capacity of the Panama Canal

(6) The capacity of the Panama Canal is limited because of the navigational problems which are inherent in a restricted waterway. On the Atlantic side of the canal there is a summit level anchorage in Gatun Lake, where vessels bound in either direction can anchor until they are notified to proceed. These favorable conditions do not exist on the Pacific side. The Pedro Miguel locks are located immediately to the south of Gaillard Cut, with no summit level anchorage available, at this location, as in Gatun Lake. Northbound vessels enter Gaillard Cut at the Pedro Miguel lockage intervals, where southbound vessels moving from the Atlantic to the Pacific cannot arrive more rapidly than the Pedro Miguel locks can be ready to receive them. The Gatun anchorage supplies a stopover station for both northbound and southbound vessels, and permits flexible operation at Gatun locks. At Pedro Miguel, there is no comparable anchorage. Ships must approach the Pedro Miguel locks in a relatively narrow channel and cannot anchor, thus vessels must be received as they reach Pedro Miguel. The Panama Canal is therefore limited both as to the size of ships and to the number which can be passed through the canal within a given time. A discussion of the capacity of the present canal is presented in table II of the Short Range Study Report. A summary of these capacities, as set forth in the Short Range Study, is now presented.

(7) *Limitations as to size of ships passing through canal.*—(*a*) The present locks are 110 feet wide and 1,000 feet long. At a depth of 9 feet above the bottom of a lock chamber the width is 109 feet 4 inches, and at the bottom of the chamber the width is 104 feet. The usable length of the lock is 975 feet and the maximum usable depth is 41 feet. The next limitation is the Gaillard Cut. This cut is presently 300 feet wide throughout most of its length, and it approaches a depth of 42 feet at the end of the dry season (bottom elevation 40.0; water surface elevation 82.0).

(*b*) Due to these physical limitations, the 1957 Short Range Study Report concludes that the largest size commercial ship which could

safely transit the canal under its own power should be that having a beam no greater than 102 feet, a fresh-water draft no greater than 37 feet, and a length no greater than 800 feet. Restrictions to ships with a fresh-water draft of 37 feet are based on model studies and actual experience, which prove that at least 5 feet of water is required under the keel of a ship operating in shallow restricted channels in order to minimize interaction between the ship and channel bottom. The 1957 Short Range Study Report goes on to say that vessels with a fresh-water draft greater than 37 feet could pass through the canal in an emergency but they would probably have to be towed by tugs, and would seriously interfere with normal traffic.

(8) *Number of ships per lockage.*—When it is possible to do so, two or more small ships are scheduled for transit at the same time through a single chamber. Based on present operating procedure, this condition occurs with a frequency that the total lockages passing through the canal average 1.09 oceangoing ships per lockage. Based on studies by the Panama Canal Company, it is expected that this average can be increased to 1.15 ships per lockage and, in the 1957 Short Range Study Report, the capacities of the locks are computed based on an average of 1.15 ships per lockage.

(9) *Capacity of locks.*—(*a*) Gatun locks: Each lane of Gatun locks has an average locking interval, for average size ships, of 80 minutes. Operating 16 to 18 hours per day, the Gatun locks can handle 24 to 27 average-size ships. The Short Range Study Report of 1957 indicates that this capacity could be increased to 36 average-size lockages per day, based on an operational day of 24 hours; and with the further understanding that the Gaillard Cut and all locks would have adequate lighting; that the Gaillard Cut would be widened to 500 feet south of Culebra to Pedro Miguel; and that moorings would be installed north of Pedro Miguel. An analysis of canal operations, based on 36 lockages per 24-hour day, with canal improvements, and with synchronized periods of operation at the Atlantic and Pacific locks, is shown in detail on exhibit No. 11. With a 16- to 18-hour operation, 4 crews are required at Gatun locks. If this operation is extended to a 24-hour operational day, then 6 crews would be required.

(*b*) Pedro Miguel locks: The normal capacity of the Pedro Miguel locks is 72 average-size lockages per 24-hour day, and the lockage interval is 40 minutes.

(*c*) Miraflores locks: The lockage interval at Miraflores is 60 minutes, and the capacity is 48 average-size lockages per 24-hour day.

(*d*) Maximum lockage capacity: The lockage capacities of Pedro Miguel and Miraflores locks exceed the capacity of the Gatun locks; therefore, the Gatun locks are the controlling factor based on lockages. Under ideal conditions, during nonoverhaul periods, and with no clearcut ships, the maximum capacity of the channel, based on lockages, would be 36 average-size lockages per 24-hour day. This capacity, however, is reduced by lock overhauls and the number of clearcut ships.

(*e*) Conditions and capacities of locks during overhaul period: All locks are overhauled every 5 years, and during this period the lock being overhauled is operated with only 1 lane. The 1-lane operation occurs for about 13 weeks during the overhaul of Gatun locks; and about 21 weeks during the overhaul of the Pedro Miguel and Miraflores locks. In addition, after both lanes of a lock have been overhauled

and placed in operation, it is necessary to then overhaul the center wall culvert and valves. This takes about 4 weeks at Gatun locks and about 3 weeks at Pedro Miguel and Miraflores locks. During the overhaul period, when there are no clearcut ships, the capacities at Pedro Miguel and Miraflores are not reduced below the 36 lockages that can be handled at the Gatun locks. The Short Range Study Report of 1957 indicates, under these conditions of overhaul of the Pacific locks, that the 36 average-size lockages can be maintained. However, during the overhaul period at the Gatun locks the capacity is reduced, at which time the maximum capacity of the canal, without clearcut ships, is reduced to 30 average-size lockages per 24-hour day.

(*f*) Clearcuts: When clearcut ships are passing through the canal, the capacities of all three locks are reduced, especially during the overhaul periods. A "clearcut ship" is described as a ship which, due to its size, maneuverability, or cargo is not permitted to pass another ship in Gaillard Cut. A "daylight clearcut ship" is one which, due to extremely hazardous conditions, is required to transit Gaillard Cut and all locks during daylight hours. A large clearcut ship (a ship over 585 feet in length or 79 feet in beam) increases the lockage interval from 80 to 110 minutes, and the lockage interval for a "supership" (a ship over 654 feet in length or 86 feet in beam) is about 170 minutes. With 2 daylight clearcut ships each day passing through the canal, the capacity of Gatun lock is reduced from 36 to 35 lockages per 24 hours, and during the overhaul period the capacity is reduced from 30 to 29 lockages per 24-hour day. On the Pacific side at the Miraflores locks, during an overhaul period, 2 clearcut ships reduce the capacity of the canal from 36 to 33 lockages, and at Pedro Miguel, under these same conditions, the capacity is reduced to 30 lockages per 24-hour day. If more than two daylight clearcut ships are passing through the canal, then the dependable capacity is further reduced.

(10) *Present and estimated future lockage intervals and capacities.*—The present and estimated future lockage intervals based on 24-hour operation, which are shown in table I of the Short Range Study of 1957, are set forth below. A saving in time is to be noted as anticipated with the new locomotives in service.

[In minutes]

	Present average ships	Locomotives daylight clearcuts	New locomotives	
			Average ships	Daylight clearcuts
Miraflores locks	60	85	55	80
Pedro Miguel locks	40	50	35	45
Total, Pacific locks	100	135	90	125
Gatun locks	80	110	70	100

NOTE.—Reference is again made to exhibit No. 11, prepared by the Panama Canal Company, on which an analysis of canal operations is presented.

(11) The canal has strict regulations requiring one-way traffic in Gaillard Cut under certain conditions. The large merchant vessels, large warships, large ore ships, large oil tankers, ships ladened with explosives, and vessels which are hard to handle are permitted to enter Gaillard Cut only when it is clear of other passing vessels. In order

to insure safety, traffic in the opposite direction is delayed until these "one way" or "clearcut" vessels have passed out of Gaillard Cut. The capacity of the canal is reduced because of this operational restriction.

Section 5. The Operational Problems of the Canal

(12) In the operation of the canal, the traffic bottleneck at Pedro Miguel, the restricted width of the canal through the Gaillard Cut, the surges in Gaillard Cut caused by the lockages, together with weather conditions affecting night operation, are the principal operational problems. On the Atlantic side of the canal there is an anchorage in Gatun Lake where ships may anchor until they receive orders to transit the canal. This favorable high-level anchorage does not exist on the Pacific side. Northbound vessels enter Gaillard Cut at the lockage intervals at Pedro Miguel. Southbound vessels cannot reach Pedro Miguel Locks more rapidly than these facilities can be made available to receive them.

(13) Operation of the canal indicates that ships start at both the Atlantic and Pacific sides simultaneously. Northbound vessels are locked up to the canal level continuously until the northbound traffic has passed through Pedro Miguel locks. This northbound traffic proceeds through Gaillard Cut into Gatun Lake, and thence to the Gatun anchorage or locks. Southbound vessels from the Atlantic are raised in Gatun locks to the lakelevel anchorage, where they wait until they are scheduled for transit. After the northbound traffic clears the Gaillard Cut at Gamboa, the southbound traffic then enters Gaillard Cut and proceeds to the Pedro Miguel locks. Gatun Lake makes available anchorage facilities for both northbound and southbound vessels.

(14) Fog is one of the hazards causing traffic interruptions in the narrow reaches of the canal. The canal north of Pedro Miguel is subject to fog at frequent intervals. The Gatun anchorage and Miraflores Lake are relatively free of fog. Under conditions of fog, it is dangerous for ships to enter the Gaillard Cut because of the limited width of the canal. The canal capacity is normally reduced during unfavorable weather conditions; and during periods of long fog duration the capacity of the canal is less than that heretofore indicated.

(15) The record of accidents reveals that the most serious ones were found to be lock accidents, groundings, and collisions. Groundings in the Gaillard Cut appear to be the most feared, and chiefly occur when a large vessel strikes a rocky bank. Collisions in the narrow waters of the Gaillard Cut are likely to be serious. The Gaillard Cut appears to be the most serious danger spot in the Panama Canal. Wall or bank suction, in some instances, cause groundings of large ships when they pass certain constricted sections of the canal.

Section 6. The Traffic Through the Canal

(16) Part V contained in the Short Range Study Report of 1957 includes a complete discussion of the future capacity requirements of world commerce. The operation of the canal from 1946 through 1956 showed an increase of about 395 transits per year, but since 1952 a somewhat lower but constant growth rate of an increase of 250 transits

per year has taken place. Appendix A of the Short Range Study Report of 1957 contains a forecast of canal traffic for the fiscal years 1957–61. The estimated number of oceangoing ships to transit the canal during this period, as contained in appendix A, is as follows:

Estimated number of oceangoing ships to transit Panama Canal, fiscal years ending June 30, 1957–61

Source	1956	1957	1958	1959	1960	1961
Commercial	8,209	8,340	8,400	8,490	8,590	8,690
Government	266	265	260	260	260	260
Total	8,475	8,605	8,660	8,750	8,850	8,950

Fiscal year	Statistically projected average daily transits [1]		Projected required lockage capacity [1]		Present available lockage capacity [2]		
	Total	Clear cuts	Lockages	Daylight clear cuts	Critical condition	Capacity	Deficits
1957	23.8	2.6	30	2	Normal	35	
1958	23.7	2.7	30	2	Pacific overhaul	30	
1959	24.0	2.9	30	3	Normal	34	
1960	24.3	3.1	31	3	do	34	
1961	24.5	3.3	31	3	Atlantic overhaul	28	3
1962	24.8	3.5	31	3	Normal	34	
1963	25.1	3.6	32	3	Pacific overhaul	29	3
1964	25.3	3.8	32	3	Normal	34	
1965	25.6	4.0	32	3	do	34	
1966	25.9	4.2	33	3	Atlantic overhaul	28	5
1967	26.2	4.4	33	4	Normal	34	
1968	26.5	4.6	34	4	Pacific overhaul	29	5
1969	26.7	4.8	34	4	Normal	34	
1970	27.0	5.0	34	4	do	34	
1971	27.3	5.2	35	4	Atlantic overhaul	28	7
1972	27.5	5.4	35	4	Normal	34	1
1973	27.8	5.5	35	4	Pacific overhaul	29	6
1974	28.1	5.7	36	5	Normal	34	2
1975	28.4	5.9	36	5	do	34	2
1976	28.6	6.1	36	5	Atlantic overhaul	28	8

[1] Based on chart No. 1, adjusted.
[2] For uniformity all capacities are with present towing locomotives. New towing locomotives are expected to be available in 1961.

(17) Using the short-range forecast as described above, as a guide, being modified by past experience and past traffic statistics resulting from the operation of the Panama Canal, a long-range forecast of oceangoing transits was made by the Panama Canal Company, and included in the Short Range Study Report of 1957, identified as chart No. 1. The annual totals for the fiscal years 1957 through 1976 shown in chart No. 1, converted to daily averages, are presented in the following tabulation. This tabulation also sets forth the projected lockage capacity required during the fiscal years 1957 through 1976, along with the present available lockage capacities.

(18) The Short Range Study Report of 1957 indicates that the ships arriving each day for transit through the canal are not constant. During the fiscal years 1955 and 1956 the number of oceangoing ships varied between a minimum of 12 and a maximum of 38 ships per day. In providing for the future capacity of the canal, consideration must be given to its adequacy in order to accommodate the volume of traffic which will present itself for transit on a peak day. If sufficient capacity does not exist above the annual daily average number of

transits per year, a large number of holdups and other delays to shipping will occur.

(19) The Short Range Study Report of 1957 sets forth the following dependable lockage capacities, based on 24-hour operation, of the Panama Canal, using present towing locomotives:

Critical condition	Number of daylight clear cuts			
	0	2	3	4
	Total number of lockages			
Normal (i. e. no overhauls): Gatun locks control	36	35	34	34
Gatun locks overhaul: Cylindrical valves out, double lane, single culvert, without relays	30	29	28	28
Pedro Miguel locks overhaul: Miter gates out, single lane, double culvert, without relays	36	30	29	29
Miraflores locks overhaul: Miter gates out, single lane, double culvert, with relays	36	33	31	31

(20) The Short Range Study Report of 1957 contains the following estimated dependable capacities of the canal, based on 24-hour operation, using new towing locomotives:

Critical condition	Number of daylight clear cuts			
	0	2	3	4
	Total number of lockages			
Normal (i. e. no overhauls): Gatun locks control	41	40	38	38
Gatun locks overhaul: Cylinderical valve out, double lane, single culvert, without relays	34	33	32	32
Pedro Miguel locks overhaul: Miter gates out, single lane, double culvert, no relays	38	31	30	30
Miraflores locks overhaul: Miter gates out, single lane, double culvert, with relays	39	36	34	34

SECTION 7. THE SHORT RANGE PROGRAM OF 1957 FOR THE IMPROVEMENTS TO THE PANAMA CANAL

(21) Part VII of the Short Range Study Report of 1957 sets forth a list of improvements which were taken into consideration by the Panama Canal Company when the Short Range Study Report of 1957 was developed. These improvements were as follows:

(22) *Project A: The enlargement of the Cristobal anchorage.*—In order to increase flexibility of harbor operations at the Cristobal anchorage, approval was given by the Board of Directors of the Panama Canal Company in 1954, for the deepening of this anchorage to 40 feet, in order to provide 5 anchorages and a turning area. This project was estimated to cost $2,475,000. The funds for this improvement were included in an approved budget. This work will be completed during 1958. (NOTE.—This project is under construction.)

(23) *Project B: The widening of Bend 1868.*—This project originally consisted of the removal of the point of land on the east bank of the canal as shown on the photograph contained in this report and identi-

fied as exhibit No. 5, and on plan identified as exhibit No. 5A. Current study by the Panama Canal Company indicates that more extensive widening and a greater increase in safety of the canal operations can be obtained by expending the same amount of money by excavating the west bank. In 1945, the board of directors approved this operation. This project was started in 1958, and is expected to be completed in 1959. It will involve 1,280,000 cubic yards of excavation, and a cost of $1,800,000. (NOTE.—This project is included in a current program; funds have been budgeted.)

(24) *Project C: Purchase of additional locomotives.*—This project involves the purchase of new locomotives consisting of either 5 additional LeTourneau-type locomotives, or 9 additional locomotives of a type similar to the present locomotives. The Short Range Study Report of 1957 concludes that the theoretical capacity of the canal will be increased by the acquisition of the additional locomotives, especially during the overhaul period at Gatun locks. (NOTE.—This project is included in a current program; funds have been budgeted.)

(25) *Project D: Improved lighting of the canal.*—This project consists of improved lighting for the locks, and for lighting the Gaillard Cut. (NOTE.—This project is included in the short-range program and it will be discussed later.)

(26) *Project E: Mooring facilities north of Pedro Miguel locks.*—This project consists of the installation of mooring facilities on the east bank of the canal north of Pedro Miguel locks to permit the ships which are raised through Pedro Miguel locks to tie up at the mooring station to wait for traffic to resume transit through the cut. (NOTE.—This project is included in the short-range program and it will be discussed later.)

(27) *Project F: Widening Gaillard Cut to 500 feet.*—This project consists of the widening of the Cucaracha-Paraiso Reaches of the Gaillard Cut to 500 feet; and this project is proposed by the Panama Canal Company in order to increase safety of navigation, capacity, and flexibility of operations. (NOTE.—This project is included in the short-range program and it will be discussed later.)

(28) *Project G: Widening Bend 1660.*—This project consists of the widening of Bend 1660 and is necessary in order to accommodate deeply ladened vessels and "superships" difficult to maneuver around Bend 1660 because of "bank suction" which creates a navigation hazard. (NOTE.—This project is included in the short-range program and it will be discussed later.)

(29) *Project H: Deepening Gaillard Cut and Channel of Gatun Lake.*—The existing bottom of Gaillard Cut is approximately at elevation plus 40. Navigation requires that a minimum depth of 42 feet of water be maintained, and therefore the surface elevation of Gatun Lake cannot be permitted to drop below elevation 82. The Short Range Study Report of 1957 indicates that it might be desirable to deepen the bottom of Gaillard Cut and the channel in Gatun Lake by 3 feet, thus bringing the elevation of the lake bottom from 40 down to elevation 37. The Short Range Study Report of 1957 goes on to say, with the channel deepened 3 feet, it would then be possible to take the lake level down to elevation 79 during the dry season, thus providing more usable water for lockages and for generating power.

(30) The following is quoted from the Short Range Study Report of 1957 for Improvements to the Panama Canal:

Since Gaillard Cut is made up almost entirely of rock; both widening and deepening are done by drilling, blasting and mucking. If deepening of a given section is accomplished simultaneously with the widening of that section, the extra depth is obtained by merely drilling a little deeper and using a little more explosives, with very little increase in time of operation of either the drill barge or dipper dredge. If, however, deepening is done after widening has been completed, it is necessary to drill and blast a second time and the cost of this additional operation drastically increases the cost of deepening. The relative costs of deepening by the two methods are summarized with deepening of the present existing channel as follows (NOTE.—This project is not included in the short-range construction project):

Reach	Existing channel		Widening projects costs			
	Yardage	Costs	Project	Yardage	During widening	After widening
Pedro Miguel lock approach	160,000	$469,000	None			
Paraiso-Cucaracha	399,000	1,167,000	F-1	192,000	$335,000	$768,000
Culebra	361,000	1,056,000	None			
Empire	265,000	776,000	F-2	110,000	205,000	441,000
Bas Obis-Cascadas	564,000	1,650,000	F-3	337,000	633,000	1,348,000
Chagres Crossing	151,000	442,000	None			
Gatun Lake (as needed)	6,200,000	4,740,000	None			
Total	8,100,000	10,300,000		639,000	1,173,000	2,557,000

The following is also quoted from the Short Range Study Report of 1957:

Total costs of deepening to elevation 37 of the existing channel plus all proposed widening projects would, therefore, be about $11,473,000 if widening projects are initially carried to elevation 37 depth and $12,857,000 if deepening of these projects is accomplished after widening.

(30a) *Comment of board of consultants.*—There are several other practicable means for deepening the water for navigation purposes, such as maintaining the minimum water level in Gatun Lake above elevation 82 feet. At present the board of consultants has insufficient material for presenting analyses of the several methods.

(31) *Project I: Widening Bends 1366 and 1450–N.*—There are islands or points of land immediately adjacent to the boundaries of Bends 1366 and 1450–N, which hinder visibility in the canal. The removal of these obstructions will ease the curvature of the canal and improve visibility. There are 1,770,000 cubic yards of excavation, costing $2,137,000, involved at Bend 1366, and 290,000 cubic yards of excavation involved at Bend 1450–N, costing $456,000. (NOTE.—This project is not included in the short-range construction program of 1957 for improvements to the Panama Canal.)

(32) *Project J: The improvements to the approach of Miraflores locks.*—This project involves cutting back the west bank of the canal slightly south of Miraflores locks. The purpose of this project is to improve the existing hazard presented by the west bank, in southbound transits leaving Miraflores locks. This project involves 350,000 cubic yards of excavation at a cost of $500,000. (NOTE.—This project is not included in the short-range construction program of 1957 for improvements to the Panama Canal.)

(33) *Project K: The improvements to the channel in the vicinity of fuel dock No. 4.*—Fuel dock No. 4, located at Balboa, projects into

the main channel of the canal and creates a hazard resulting from the wave action of passing ships. This condition could be corrected either by cutting back the west bank of the canal channel opposite dock No. 4, to provide more room for passing ships, or by abandoning dock No. 4 as a fuel dock and rehabilitating dock No. 7, which is further removed from the channel and almost perpendicular to it. Cutting back the west bank of the canal channel would involve 800,000 cubic yards of excavation at a cost of $2,480,000. Rehabilitating dock No. 7 would cost $1,060,000. (NOTE.—This project is not included in the short-range program of 1957 for improvements to the Panama Canal.)

(34) *Project L: Closing the openings in the north approach wall of Gatun locks.*—The north approach wall at Gatun locks is built on piling and on piers, thus permitting water from the center culvert to spill out of one lane of the locks, resulting in a current in the other approach channel. To correct this condition, it would be necessary to close the openings in the north approach wall and to install a regulating valve in the center culvert. This would permit the discharge of water in the same side of the wall as the lane from which it comes. The estimated cost of this project is $482,000. (NOTE.—This project is not included in the short-range program of 1957 for improvements to the Panama Canal.)

(35) *Project M: Widening the Pacific entrance to the canal.*—The dredged channel from the Pacific Ocean to Balboa Harbor is 500 feet wide, and there are usually strong cross currents and cross winds in this vicinity. The effective width of the canal for handling ships is reduced by 20 to 25 percent because of this condition. A 600-foot wide channel would reduce the hazrds created by currents and winds, and a minimum width channel of 550 feet could be maintained during low tides. This project involves 1,007,000 cubic yards of excavation at an estimated cost of $652,000. (NOTE.—This project is not included in the short-range program of 1957 for improvements to the Panama Canal.)

(36) *Project N: The Trinidad Dam.*—Part VI of the Short Range Study Report of 1957 for the Panama Canal Improvements includes a study and discussion of the water-supply requirements for the canal. The Short Range Study Report of 1957 indicates that the present water supply is inadequate during a dry season to meet all of the requirements. The construction of a dam to separate the Trinidad arm of Gatun Lake from the rest of the lake would create additional water storage, and it would also provide additional flood-storage capacity. The spillway crest of this dam would be at elevation 95, and it would create an additional storage of 309,550 acre-feet or about 28 percent of the present usable storage. The estimated cost of this project is approximately $33,871,000. (NOTE.—This project is not included in the short-range program of 1957 for improvements to the Panama Canal.)

(36a) *Comment by board of consultants.*—The Trinidad Dam, referred to herein, is an adaptation of a diversion structure in the sea-level-canal studies. (See appendix 9, fig. 45 of 1947 report.) For purposes of augmenting water supply, flood control, and better regulation of water levels in Gatun Lake, a more suitable location and water level in a new reservoir could be found. Also, there are other dam sites which might better serve this purpose. At present, the board of

consultants does not have sufficient material for presenting an analyses of the several sites which might be considered for reservoir purposes.

(37) *Project O: Removal of SIP–9.*—During World War II, a framework and railroad trestle, referred to as SIP–9, were constructed upstream from Gatun Dam to provide means for installing an emergency steel-plate dam in the event of damage to Gatun Dam. The Short Range Study Report of 1957 indicates that this emergency dam is no longer necessary and that it could be removed. This is estimated to cost approximately $350,000. (NOTE.—This project is not included in the short-range program of 1957 for improvements to the Panama Canal.)

(38) *Project P: The modification of locks for mitergate overhauling.*—The locks are overhauled every 5 years, and during this period it is necessary that 1 lock be dewatered and is therefore out of operation. During this period, at Gatun Locks, only 1 lane is in service for 3 to 4 months, and during the overhaul period on the Pacific side, 1 lane operation is required for 5 to 6 months. Studies have been made to develop a procedure whereby the miter gates might be overhauled in a separate repair yard, using spare miter gates during the overhaul period. The following is quoted from the Short Range Study Report of 1957.

(1) *Miter gate modifications.*—This involves changes in yoke, pintle, and sill seal of the gate and the attachment of lifting lugs to the gate. The lifting lugs have been designed but not installed and the studies on seal and yoke are about 5 percent completed.

(2) *Gate-handling equipment and procedure.*—The equipment and procedure for removing a gate with the floating crane has been roughed out but not completed. About 75 percent of the equipment has been designed and a small amount has been manufactured as part of SIP–10 during the war.

(3) *Gate-repair yard.*—This special gate-repair yard has not been designed but a site has been proposed near Gatun locks, where the dock can be flooded or drained by gravity thus eliminating the need for pumps.

(4) *Emergency dam-overhaul procedure.*—No work has been done on a new overhaul procedure for the emergency dam, but it is believed that a procedure can be developed that will reduce the chamber outage time to 10 days or less.

(5) *Side-wall bulkheads and slots.*—The bulkheads and slots for the access tunnels to the side-wall culvert have been designed but not built. The bulkheads and slots for the drainage culvert have not been designed. These are to permit overhaul of side-wall culvert valves without taking a chamber out of service.

SECTION 8. CONCLUSIONS CONTAINED IN SHORT RANGE STUDY REPORT OF 1957

(39) The conclusions which were reached as a result of the 1957 study by the Panama Canal Company, and as contained in part X of the Short Range Study Report of 1957 are as follows:

A. General

The limitations to handling safely and efficiently the increased traffic projected for the next two decades are found to be as follows:

1. Lack of sufficient illumination of the lock chambers and working areas at the locks, which prevents safe navigation of large ships into locks after dark, and which requires the scheduling of so-called daylight clear cuts.

2. Lack of illumination of the channel and banks in Gaillard Cut, which prevents safe passing at night and, therefore, requires oneway traffic at night.

3. Lack of width of channel in Gaillard Cut, which prevents safe passing of many vessels and requires their being scheduled as "clear cuts."

4. Lack of holding stations north of Pedro Miguel for vessels waiting for southbound vessels to clear the cut.

B. Capacity

1. A study of table XVI reveals that procurement of 27 new locomotives by 1961 and accomplishment of projects C, D, and E (5 additional locomotives, improved lighting, and mooring facilities) by 1963 will increase capacities sufficiently to meet requirements of world commerce until 1976.

2. The only project investigated which will be adequate to meet capacity requirements beyond 1976 is project P (modify locks for miter-gate overhaul). Due to the high cost and availability of less expensive means discussed in "1" above, this project is not considered necessary or justified at this time. However, a method of eliminating or reducing outage time due to miter gate add emergency dam overhaul will have to be developed to meet long-range capacity requirements of the canal, unless the lock system of the canal is reconstructed or the present canal is replaced by a sea-level canal in the meantime. However, $300,000 has been included in the fiscal year 1958 operating budget to be used for experimentation to develop definite procedures for accelerated overhaul of miter gates and emergency dams.

C. Safety of operations

1. Although all projects discussed as needed to improve safety are highly desirable, and should be completed as time and funds become available, the following appear to be the most essential:

(*a*) Widen Bend 1868 (project B).
(*b*) Widen Bend 1660 (project G).
(*c*) Widen Paraiso-Cucaracha Reaches (project F–1).

2. All widening projects should include excavation to PLD plus 37, not only to save on costs of any future deepening of the entire channel, but also as an immediate aid to safety of navigation.

D. Water supply and flood control

1. It is not considered essential to accomplish any projects at this time, other than the currently budgeted telemetering system, to improve water supply or flood control.

2. Should the need arise at a later date, deepening of Gaillard Cut and Gatun Lake Channel appears to offer the most advantages.

(39a) *Comments of board of consultants*—For maintaining deeper water for navigation purposes, the Gatun Lake level could be held at a higher minimum than elevation 82 feet, by decreasing power production at Gatun, by building a new reservoir, by pumping sea water, or by a combination of these methods.

E. Funding and scheduling

1. The estimated costs of projects which are considered feasible and essential to meet the immediate requirements of world commerce are:

Project	*Funds required*
Project C: 5 additional locomotives	(1)
Project D: Improved lighting	$1, 550, 000
Project E: Mooring facilities, north Pedro Miguel	1, 359, 000
Project F–1: Widen Paraiso-Cucaracha Reaches ($13.409—$1.8 of project B)	11, 609, 000
Project G: Widen Bend 1660	4, 438, 000
Total	18, 956, 000

[1] Already budgeted.

2. As discussed in part VIII, it is anticipated that a cumulative balance of $19 million from Panama Canal Company source will be available for waterway improvements through fiscal year 1962. The above projects, therefore, can be accomplished by 1963, as required to meet projected requirements of world commerce, without outside funds. A proposed construction schedule to accomplish the projects (using hired labor for all dredging and contract labor for dry

excavation and other work) is shown in chart 10. Obligations and expenditures required by year are—

	Obligations	Expenditures
Fiscal year 1959	$9,312,000	$2,912,000
Fiscal year 1960	4,091,000	7,921,000
Fiscal year 1961	4,811,000	7,228,000
Fiscal year 1962	742,000	895,000
Total	18,956,000	18,956,000

Section 9. Discussion of the Short-Range Program Recommended in the Report of 1957

(40) *Projects now under consideration.*—The projects now under consideration for improving the Panama Canal, and which are recommended in the short-range program, are as follows:

Project D: Improved lighting in the Gaillard Cut and at the locks.

Project E: Mooring facilities north of Pedro Miguel locks.

Project F–1: Widening the Paraiso-Cucaracha Reaches of Gaillard Cut to 500 feet.

Project G: Widening the canal at Bend 1660.

The following discussion covers each of the four projects included in the short-range program of 1957.

(*a*) Project D: Improved lighting in the Panama Canal: This project consists of improved lighting for the locks, and for Gaillard Cut. The original lighting at the locks consisted of concrete standards 30 feet high with reflectors. This original lighting system was removed during World War II to allow clearance for the flight decks of aircraft carriers, and was replaced by temporary pipe standards with reflectors. Perimeter fence lighting was installed in 1953 at all locks to improve security. It appears that this latter addition creates a glare which interferes with the navigation of ships approaching the locks. The combination of inadequate lock lighting, and the glare from the perimeter fence, results in a hazardous condition during darkness. Because of this situation many ships are required to complete their passage through the locks during daylight hours. A lighting consultant from the Office of the Chief of Engineers has studied the problem, and it has also been studied by the Engineering and Construction Bureau of the Panama Canal Company. As a result of these studies, the recommendations have been made in the Short Range Study Report of 1957.

The hazards of a ship transiting the Gaillard Cut are accentuated after nightfall. Under present conditions no ship, regardless of its size or cargo, is permitted to pass another vessel in Gaillard Cut during hours of darkness. This results in frequent delays to shipping and a reduction in the capacity of the canal. The capacity of the canal could be increased if the cut were lighted to provide safer nighttime operations. The consultant from the Chief of Engineers recommended the installation on the banks of the canal of 20,000 lumen shielded mercury vapor luminaires mounted on 35 feet high standards and spaced approximately 225 feet. The Engineering and Construction Bureau of the Panama Canal Company has developed a lighting system for the Gaillard Cut consisting of 20,000 lumen nonshielded

fluorescent luminaries mounted on standards approximately 30 feet high and spaced 300 to 400 feet on centers. The installation of this system would cost about $730,000 and the operating cost would be approximately $300 per month. (See exhibit No. 10.) The cost of installing the lock lighting is estimated at about $820,000 and a monthly operation cost of $720. (See exhibit No. 9.) The total cost of lighting would therefore be $1,550,000, and the total monthly operation cost is estimated to be $1,020.

Lighting both the Gaillard Cut and the locks would improve the safety of canal operations, and would increase the capacity of the canal by reducing the number of daylight clear-cut ships and by permitting 2-way traffic in the Gaillard Cut during darkness, thus making 24-hour operation possible.

(*b*) Project E: Mooring facilities north of Pedro Miguel locks: This project consists of the installation of mooring facilities on the east bank of the canal north of Pedro Miguel locks, in order to permit ships which are raised through the Pedro Miguel locks to tie up at a mooring station and to wait for traffic to resume transit through Gaillard Cut. Any ship which is raised at Pedro Miguel locks, and a clear-cut ship is proceeding south in the cut, cannot proceed until after the southbound clear-cut ship has passed completely through the cut, and enters the locks. Furthermore, when a heavy fog occurs in Gaillard Cut, it becomes necessary to stop all traffic in the cut until the fog lifts, and at the same time the Pedro Miguel locks must suspend northbound operations. If mooring facilities were available on the east bank of the canal north of Pedro Miguel locks, the locks could continue to operate during the delays, because the ships which are raised in the Pedro Miguel locks could tie up at the mooring station to await traffic to resume in the cut. At the present, the lock-approach walls and locking chambers are used for this purpose. This method, however, does not provide sufficient storage capacity. The Short Range Study Report of 1957 indicates that a mooring station to handle southbound traffic need not be considered for construction at this time. The Short Range Study Report of 1957 furthermore states that a mooring station with a capacity for two ships is needed on the east bank for use of northbound ships. The location of this mooring station project is shown in photograph exhibit No. 4, and a rough sketch of the station is shown on exhibit No. 4A. The mooring station would be constructed by excavating an area beyond the prism of the channel and by installing 10 caissons and 25 bollards. It is estimated that the project would involve the following quantities and construction costs:

	Quantity	Cost
Excavation	300,000 yards	$630,000
Bollards	25 each	47,250
Caissons	10 each	681,750
Total cost		1,359,000

The mooring stations at Pedro Miguel locks will improve the flexibility of the canal operations, and it will increase its capacity to handle traffic.

(*c*) Project F: Widening Gaillard Cut to 500 feet: This project consists of the widening of the Paraiso-Cucaracha Reaches of the Gaillard Cut to 500 feet in order to increase safety of navigation and flexibility of canal operations. The Short Range Study Report of 1957 states that during the past 2 years the Panama Canal began to get its first experience with "supership." During this 2-year period there were 7 transits through the canal by ore ships, with a beam of 98 feet 5 inches, a length of 735 feet 6 inches, and with a fresh-water draft of 36 feet. One of these ships collided with the bank of the canal in the Paraiso-Cucaracha Reach. During this same period 1 large cargo ship, 1 large tanker, and 1 supertanker also collided with the bank in this same reach of the canal. Over the years, experience has shown that every channel widening or improvement program has resulted in a decrease in the number of accidents in the area which was improved. Since 1952, when the widening to 500 feet of the stretch identified as the Culebra Reach was completed, there have been 17 accidents in Gaillard Cut, but none in the Culebra Reach. The Canal Zone Pilots Association has recommended that widening of the Paraiso-Cucaracha Reach to 500 feet should be given immediate and urgent priority to increase the safety of the canal. This association further recommends that the widening of Empire Reach to 500 feet should be given second priority.

The Culebra Reach and the Chagres Crossing Reach of Gaillard Cut are now approximately 500 feet wide. All other reaches in the cut are 300 feet wide. Since the Paraiso-Cucaracha Reaches are where most of the accidents have occurred, the widening of these reaches is definitely a logical first step in this program. The areas to be excavated in these reaches are shown in the photograph in exhibit No. 6, and in plan on exhibit No. 6A. The estimated cost of widening the Paraiso-Cucaracha Reaches, identified as project F–1 in the Short Range Study Report of 1957, is $11,609,000, and embraces 6,410,000 cubic yards of excavation. This project, as listed on page 45 of the Short Range Study Report of 1957, sets forth the total cubic yards to be excavated in project F–1 at 7,690,000, at an estimated cost of $13,409,000. These 2 figures, however, include 1,280,000 cubic yards of excavation at a cost of $1,800,000, which is included in project B (widening of Bend 1868). The funds for the widening of Bend 1868 have been budgeted and the work at this bend is now nearing completion.

The widening of the Paraiso-Cucaracha Reaches of the Gaillard Cut would increase the capacity of the canal, its flexibility of operation, and the safety of navigation.

(*d*) Project G: Widening the canal at Bend 1660: This project consists of widening Bend 1660, as shown on photograph in exhibit No. 7, and on plan on exhibit No. 7A. This project is needed in order to accommodate deeply laden vessels and "superships" difficult to maneuver around Bend 1660 because of bank suction, which in turn creates a navigation hazard. It is proposed to widen the approaches of Bend 1660 so as to provide more channel in which to maneuver

vessels entering and leaving the bend. The estimated quantities of excavation involved and the cost thereof is estimated to be as follows:

	Yardage	Cost
Widen	2,342,000	[1] $4,373,000
Deepen widened section	35,000	[2] 65,000
Total project	2,377,000	4,438,000

[1] 1,325,000 yards ($2,475,000) of this is included in project F-2; and 888,000 yards ($1,670,000) of it is included in project F-3.
[2] 19,000 yards ($35,000) of this estimate is included in project F-2, and 15,000 yards ($28,000) of it is included in project F-3.

SECTION 10. THE ESTIMATED COST OF THE SHORT RANGE PROGRAM AND THE FUNDING THEREOF

(41) *Estimated cost of construction.*—The estimated cost of the improvements to the Panama Canal covered by the recommendations set forth in the Short Range Study Report of 1952, is as follows:

Project D: Improved lighting at the locks and through the Gaillard Cut	$1,550,000
Project E: Mooring facilities north of Pedro Miguel locks	1,359,000
Project F-1: Widening the Paraiso-Cucaracha Reaches (Excluding project B—Bend 1868. Sufficient funds are already appropriated for project B.)	11,609,000
Project G: Widening Bend 1660	4,438,000
Total	18,956,000

(42) *Cash availability.*—The Short Range Study Report of 1957 indicates that the Panama Canal Company, since its establishment in 1957, has been able to fund its capital improvements and all operating cost out of corporate earnings. In making a projection of the availability of cash for the capital program outlined herein, the following assumptions have been made by the Company:

(*a*) The net cost of Canal Zone Government will remain generally stable.
(*b*) Toll rates will remain unchanged.
(*c*) The Company will be required to increase by approximately $15 million the transfer value of assets included in the valuation report, with resulting retroactive liability for interest payment of $2 million for the 5 years ended June 30, 1956, and an increase of $375,000 in annual interest charges thereafter.
(*d*) The Company will be required to bear the $1.5 million increase in the annuity to Panama under the 1955 treaty, the increase for the first year being charged to prior years' operations.
(*e*) With respect to the conveyance of properties to Panama in 1943, the Company will be required to adjust the interest-bearing portion of the Government's investment to reflect only the costs of the assets so transferred rather than the appraised value of those assets.
(*f*) The Company will operate at a modest profit, or, at worst, break even, with all rises in costs being offset by additional revenue from increased traffic and other sources and by economies in operations. However, in view of the projected increases in operating costs as indicated under (*c*), (*d*), and (*e*), it is problematical whether these operating results can be achieved.
(*g*) Inventories will not vary appreciably from their current level.
(*h*) The installment proceeds from the sale of the steamship *Panama* will be collected on schedule.
(*i*) Depreciation costs will remain stable, as capital additions will be roughly offset by capital retirements.
(*j*) The $10 million emergency fund will be paid in to the United States Treasury and borrowing authority substituted therefor.

(*k*) The Company will draw no funds from the Treasury through appropriations or otherwise, and will make no capital repayments to the Treasury.

The Company's cash balance at the end of fiscal year 1957 is estimated to be approximately $30.2 million. Allowing $5 million for cash working funds and $6.5 million for anticipated extraordinary cash payments to the United States Treasury, a balance of $18.7 million will be available at the beginning of fiscal year 1958. Cash inflow for 1958, estimated at $8.8 million, less expenditures of $16.4 million during 1958, leaves a balance of $11.1 million available for the capital program at the beginning of fiscal year 1959. The following table provides an estimate of the amount and source of cash inflow that will be available for plant improvements.

Net cash inflow

[In millions]

	Fiscal year 1959	Fiscal year 1960	Fiscal year 1961	Fiscal year 1962
Net income	$0.5	$0.5	$0.5	$0.5
Sale of assets	.5	.5	.5	.5
Depreciation	5.5	5.5	5.5	5.5
Other nonfund charges	1.2	1.2	1.2	1.2
Sale of steamship *Panama*	1.1	1.1	1.0	
Net cash inflow	8.8	8.8	8.7	7.7

(43) The Panama Canal Company has developed a schedule showing the availability of funds for waterway improvements. This schedule is contained in the Short Range Study Report of 1957, and identified as table XIV, a copy of which is included in this report and identified as exhibit No. 13. It is proposed to accomplish the financing required to carry out the short-range program through funds which can be expected to be available to the Panama Canal Company from normal sources of revenue without congressional appropriations. A detailed analyses of the expected availability of funds is contained in appendix B of the Short Range Study Report of 1957, and it indicates that approximately $19 million will be available from fiscal year 1957 through fiscal year 1962 for the canal improvements which are outlined herein.

Section 11. Discussion of Widening Canal to 500 Feet Under Projects F–2 (Empire Reach) and F–3 (Las Cascadas-Bas Obispo Reaches)

(44) The following projects contained in project F, titled "Widening Gaillard Cut to 500 Feet," as shown in the Short Range Study Report of 1957, are not included in the immediate recommended program.

	Yardage	Cost
Project F–2: [1]		
Widen Empire Reach	6,646,000	[1] $12,525,000
Deepen widened sections	110,000	[1] 205,000
Total, project F–2	6,756,000	[1] 12,730,000
Project F–3: [2]		
Widen Las Cascadas-Bas Obispo	12,216,000	[2] 22,967,000
Deepen widened sections	337,000	[2] 633,000
Total, project F–3	12,553,000	[2] 23,600,000

[1] Includes 1,325,000 yards ($2,475,000) of the widening and 19,000 yards ($35,000) of the deepening of project G above.

[2] Includes 888,000 yards ($1,670,000) of the widening and 15,000 yards ($28,000) of the deepening in project G above.

(45) The widening of the Empire Reach and the Las Cascadas-Bas Obispo Reaches are recommended by the Panama Canal Pilots Association and are highly desirable for inclusion in a future program.

Section 12. Towing Locomotives

(46) The board of consultants does not have sufficient background information on the towing locomotives, proposed to be acquired, to comment or to discuss this feature of the program.

Section 13. List of Exhibits Contained in This Report

Exhibit No. 1. Map of Panama Canal, 1957—Between the Atlantic and Pacific Identifying "Reaches in the Canal" and "Bends in the Canal"—(Cost data on projects added by the Board of Consultants on the Isthmian Canal Studies.)

Exhibit No. 2. Profile Along Panama Canal.

Exhibit No. 3. Cross Section Through Panama Canal, Showing Widening and Deepening as Proposed in the Short Range Improvement Program.

Exhibit No. 4. Photograph of Mooring Station, North of Pedro Miguel Locks, East Bank (from 1957 Short Range Study Report of Panama Canal Improvements).

Exhibit No. 4A. Plan of East Paraiso Mooring, North of Pedro Miguel Locks—Layout of Mooring, Abutments, and Bollards (from 1957 Short Range Study of Panama Canal Improvements).

Exhibit No. 5. Photograph of Widening of Canal at Bend 1868 (from 1957 Short Range Study of Panama Canal Improvements).

Exhibit No. 5A. Plan of Canal Improvements Widening to 500 Feet at Bend 1868 (from 1957 Short Range Study of Panama Canal Improvements).

Exhibit No. 6. Photograph of Widening Canal in Gaillard Cut Through the Paraiso and Cucaracha Reaches (from 1957 Short Range Study of Panama Canal Improvements).

Exhibit No. 6A. Plan of Canal Improvements, Widening to 500 Feet Through Gaillard Cut at the Paraiso-Cucaracha Reaches (from 1957 Short Range Study of Panama Canal Improvements).

Exhibit No. 7. Photograph of Widening Canal at Bend 1660 (from 1957 Short Range Study of Panama Canal Improvements).

Exhibit No. 7A. Plan of Canal Improvements, Widening at Bend 1660 (from 1957 Short Range Study of Panama Canal Improvements).

Exhibit No. 8. Photograph of Ship Passing Through Gaillard Cut Between Contractors Hill and Gold Hill.

Exhibit No. 9. Plan of Experimental Lighting at Pedro Miguel Locks (from 1957 Short Range Study of Panama Canal Improvements).

Exhibit No. 10. Plan of Experimental Lighting in Gaillard Cut Between Stations 1708 and 1742 (from 1957 Short Range Study of Panama Canal Improvements).

Exhibit No. 11. Analysis of Canal Operations—36 Lockages With Canal Improvements and With Synchronized Periods of Operation at Atlantic and Pacific Locks (from 1957 Short Range Study of Panama Canal Improvements).

Exhibit No. 12. Summarizing Construction Program, Dollar Outlay and Construction Procedures for Short Range Improvement Program of the Panama Canal (from 1957 Short Range Study of Panama Canal Improvements).

Exhibit No. 13. Statement of Cash Available for Channel Improvements (from 1957 Short Range Study of Panama Canal Improvements).

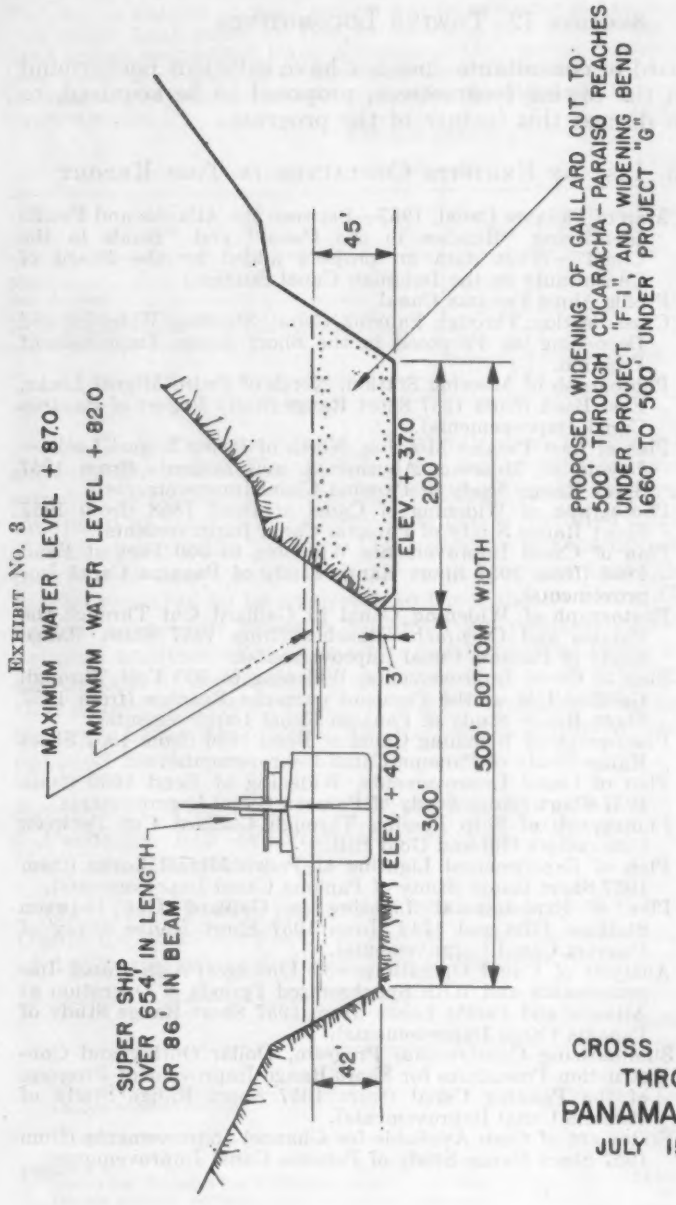
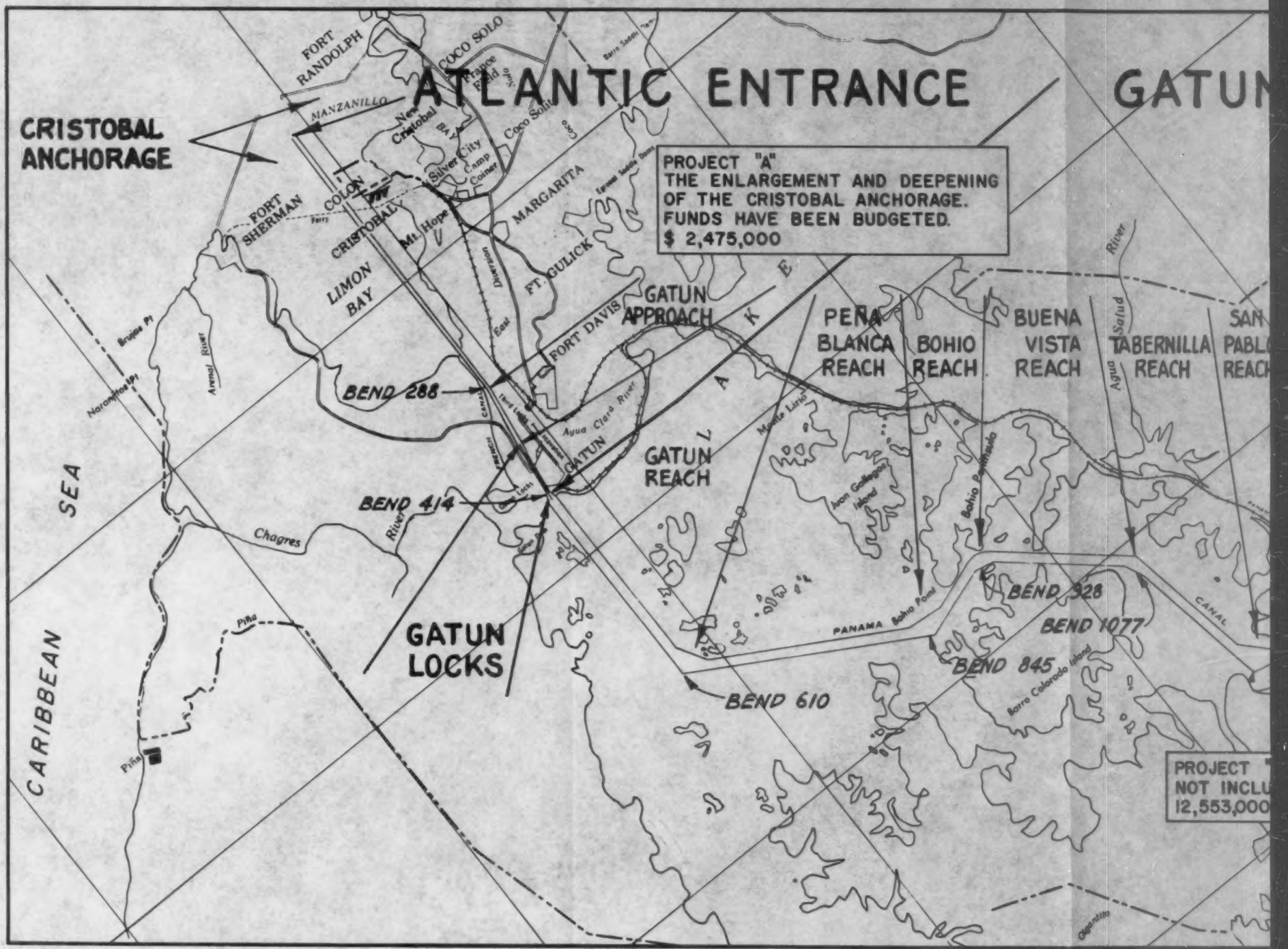
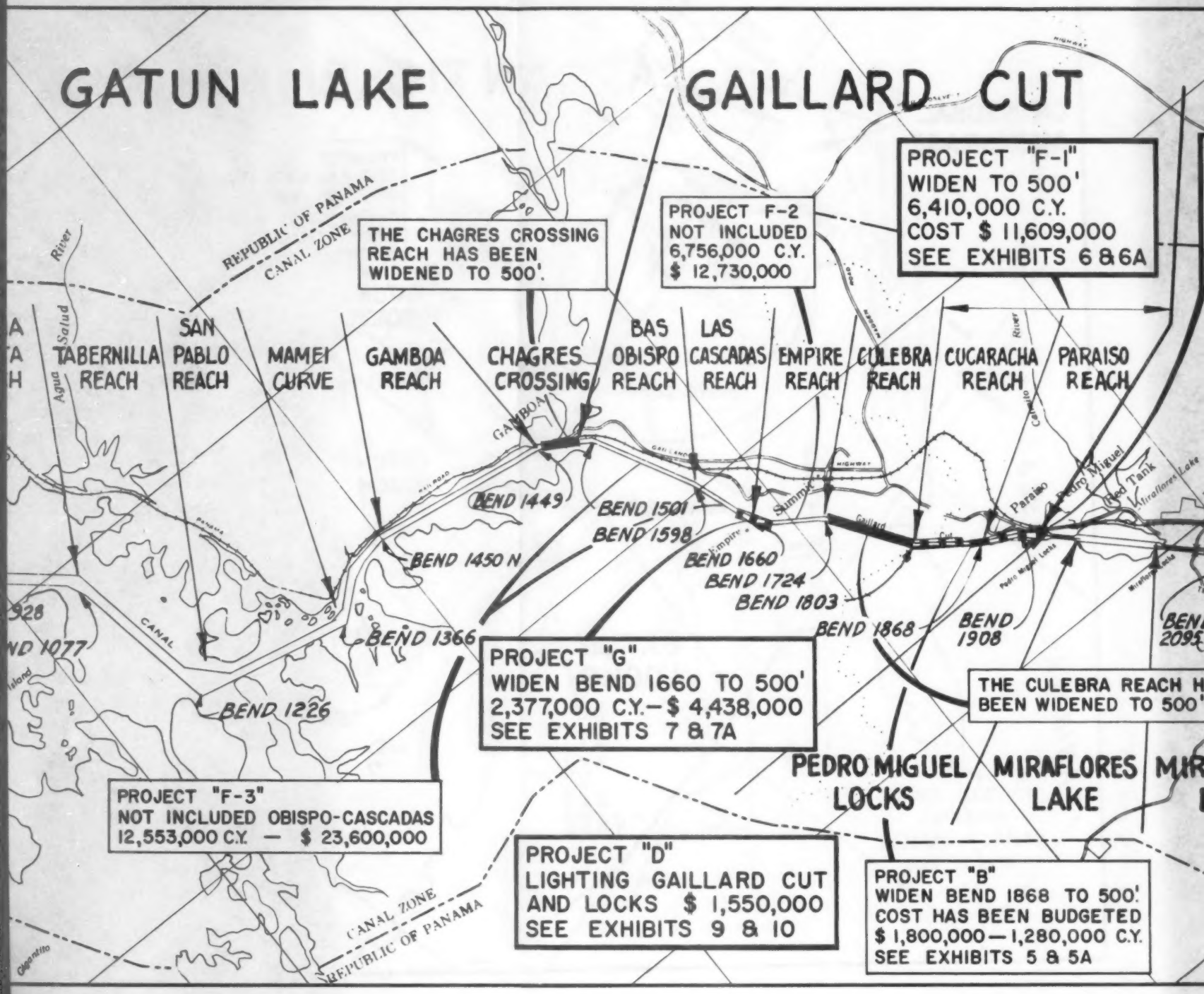
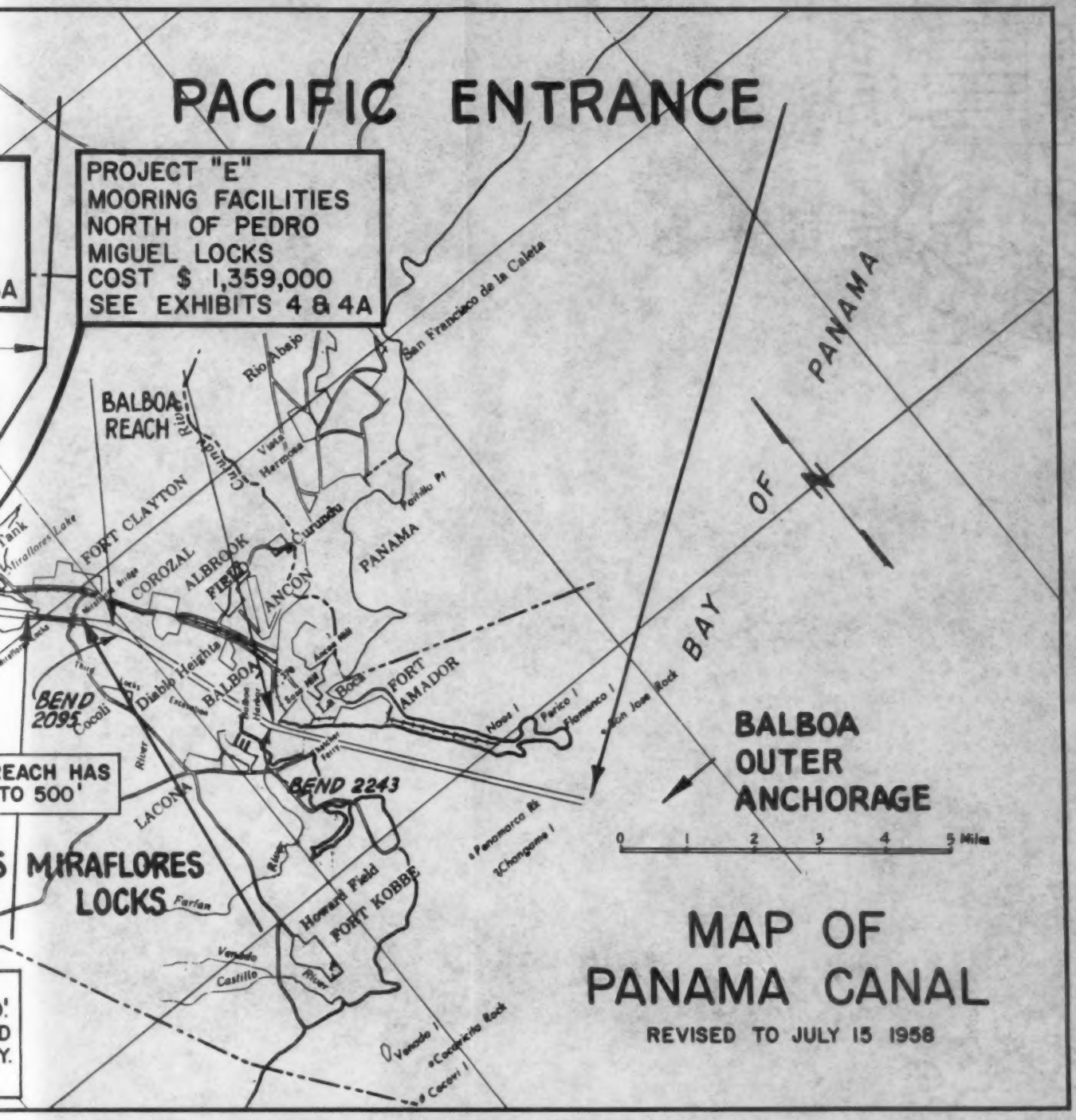


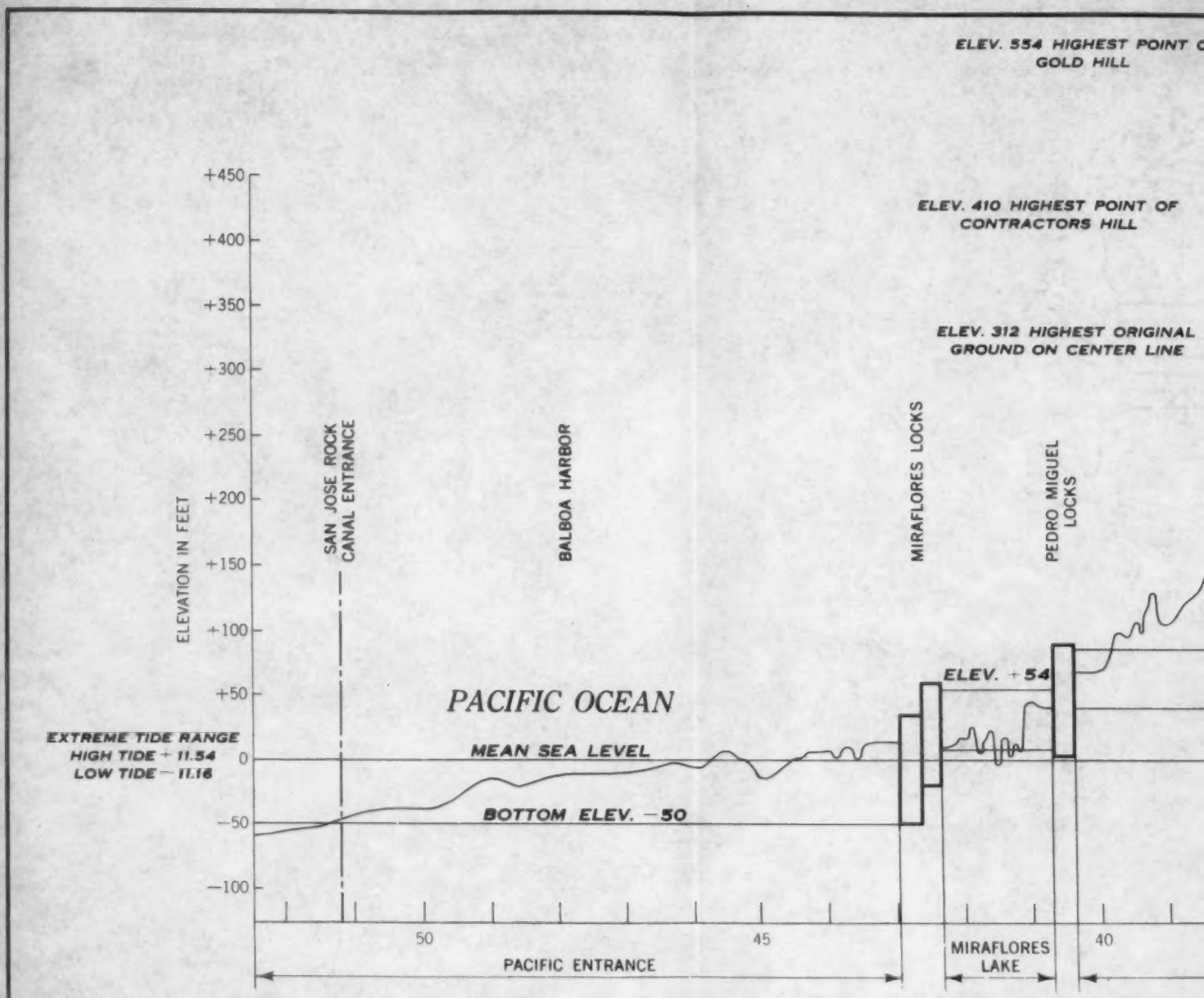
EXHIBIT No. 3
MAXIMUM WATER LEVEL + 87.0
MINIMUM WATER LEVEL + 82.0
SUPER SHIP
OVER 654' IN LENGTH
OR 86' IN BEAM
45'
ELEV. + 37.0
200'
3'
ELEV. + 40.0
300'
500' BOTTOM WIDTH
42'
PROPOSED WIDENING OF GAILLARD CUT TO
500' THROUGH CUCARACHA - PARAISO REACHES
UNDER PROJECT "F-1" AND WIDENING BEND
1660 TO 500' UNDER PROJECT "G"
CROSS SECTION
THROUGH
PANAMA CANAL
JULY 15 1958



31216 O-58 (Face p. 28) No. 1


GATUN LAKE
GAILLARD CUT
REPUBLIC OF PANAMA
CANAL ZONE
THE CHAGRES CROSSING REACH HAS BEEN WIDENED TO 500'.
PROJECT F-2
NOT INCLUDED
6,756,000 C.Y.
$ 12,730,000
PROJECT "F-1"
WIDEN TO 500'
6,410,000 C.Y.
COST $ 11,609,000
SEE EXHIBITS 6 & 6A
TABERNILLA REACH
SAN PABLO REACH
MAMEI CURVE
GAMBOA REACH
CHAGRES CROSSING
BAS OBISPO REACH
LAS CASCADAS REACH
EMPIRE REACH
CULEBRA REACH
CUCARACHA REACH
PARAISO REACH
BEND 1449
BEND 1501
BEND 1598
BEND 1450 N
BEND 1660
BEND 1724
BEND 1803
BEND 1868
BEND 1908
BEND 1366
BEND 1226
PROJECT "G"
WIDEN BEND 1660 TO 500'
2,377,000 C.Y.– $ 4,438,000
SEE EXHIBITS 7 & 7A
THE CULEBRA REACH H
BEEN WIDENED TO 500'
PEDRO MIGUEL LOCKS
MIRAFLORES LAKE
PROJECT "F-3"
NOT INCLUDED OBISPO-CASCADAS
12,553,000 C.Y. – $ 23,600,000
PROJECT "D"
LIGHTING GAILLARD CUT
AND LOCKS $ 1,550,000
SEE EXHIBITS 9 & 10
PROJECT "B"
WIDEN BEND 1868 TO 500'
COST HAS BEEN BUDGETED
$ 1,800,000 – 1,280,000 C.Y.
SEE EXHIBITS 5 & 5A


PACIFIC ENTRANCE
PROJECT "E"
MOORING FACILITIES
NORTH OF PEDRO
MIGUEL LOCKS
COST $ 1,359,000
SEE EXHIBITS 4 & 4A
BALBOA REACH
FORT CLAYTON
COROZAL
ALBROOK FIELD
ANCON
PANAMA
Rio Abajo
San Francisco de la Caleta
Curundu
Viejo Hermoso
Diablo Heights
BALBOA
La Boca
FORT AMADOR
BEND 2095
BEND 2243
LACONA
MIRAFLORES LOCKS
Howard Field
FORT KOBBE
Farfan
Vamado
Castillo
Naos I.
Perico I.
Flamenco I.
San Jose Rock
Panamarco Bk
Chamgame I.
Vamado I.
Cocoli
Cocoli I.
BAY OF PANAMA
BALBOA OUTER ANCHORAGE
0 1 2 3 4 5 Miles
MAP OF PANAMA CANAL
REVISED TO JULY 15 1958



31216 Ø-58 (Face p. 28) No. 2

NT OF

F

NAL
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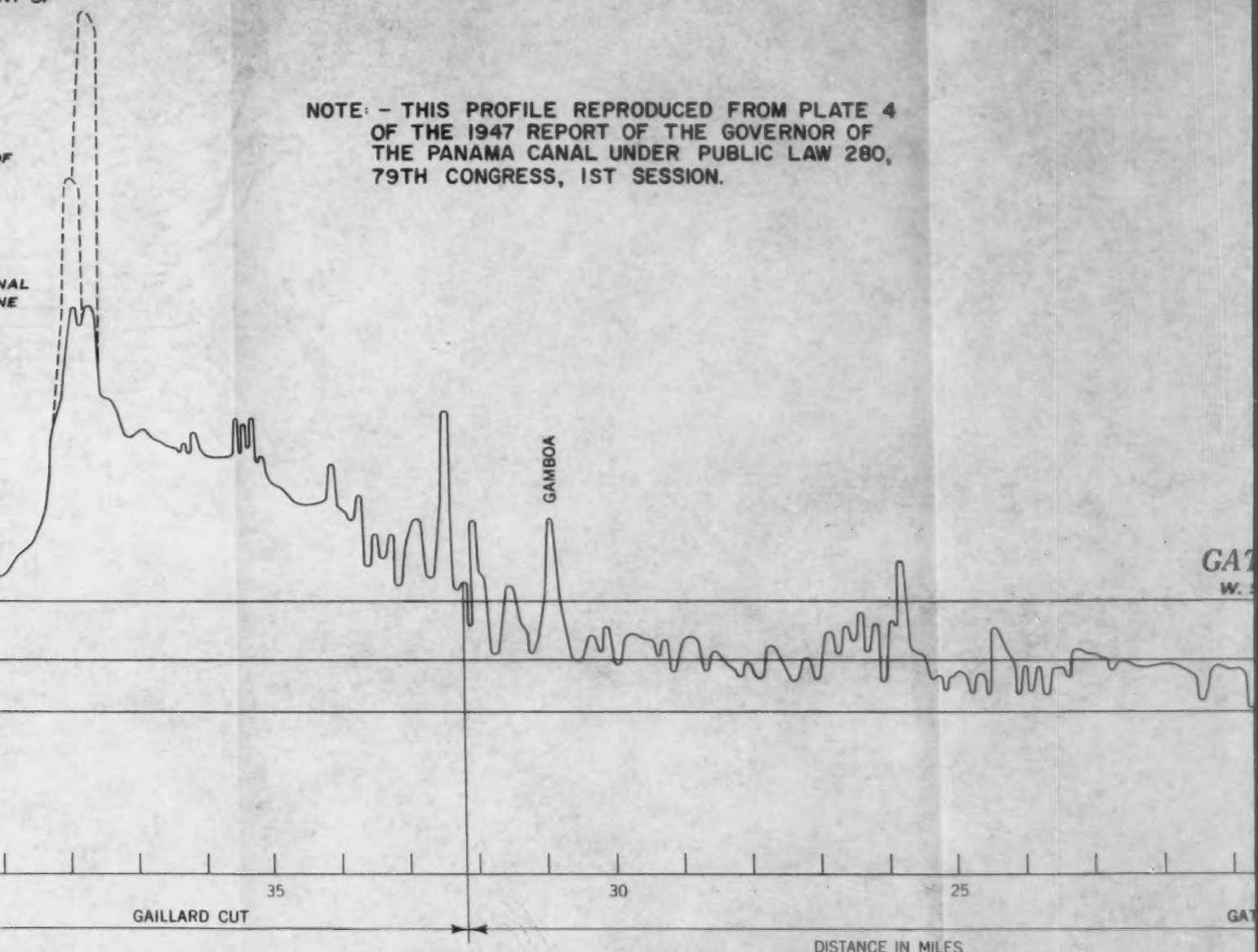
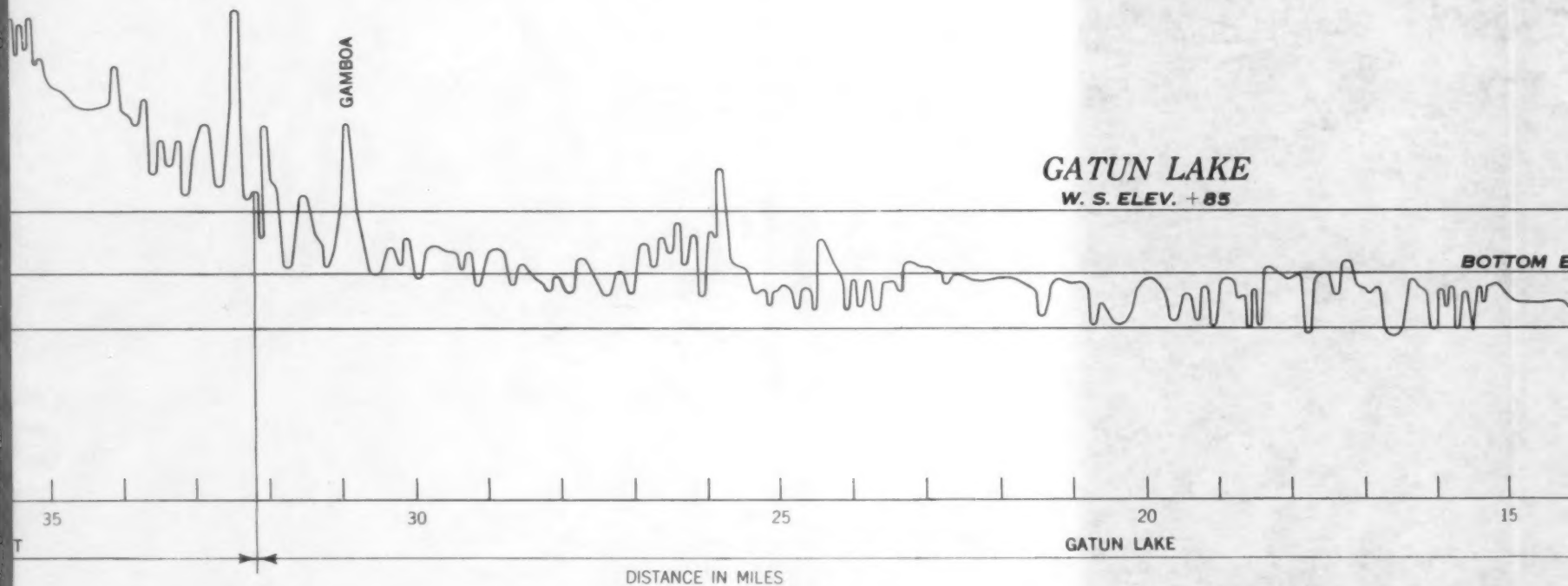
NOTE: - THIS PROFILE REPRODUCED FROM PLATE 4 OF THE 1947 REPORT OF THE GOVERNOR OF THE PANAMA CANAL UNDER PUBLIC LAW 280, 79TH CONGRESS, 1ST SESSION.



PRESENT LOCK CANAL

VERTICAL EXAGGERATION 100 TO 1

NOTE: - THIS PROFILE REPRODUCED FROM PLATE 4 OF THE 1947 REPORT OF THE GOVERNOR OF THE PANAMA CANAL UNDER PUBLIC LAW 280, 79TH CONGRESS, 1ST SESSION.



DISTANCE IN MILES

PRESENT LOCK CANAL

VERTICAL EXAGGERATION 100 TO 1

PROFILE
OF
PANAMA CANAL

BOARD OF CONSULTANTS
ISTHMIAN CANAL STUDIES

JULY 15, 1958

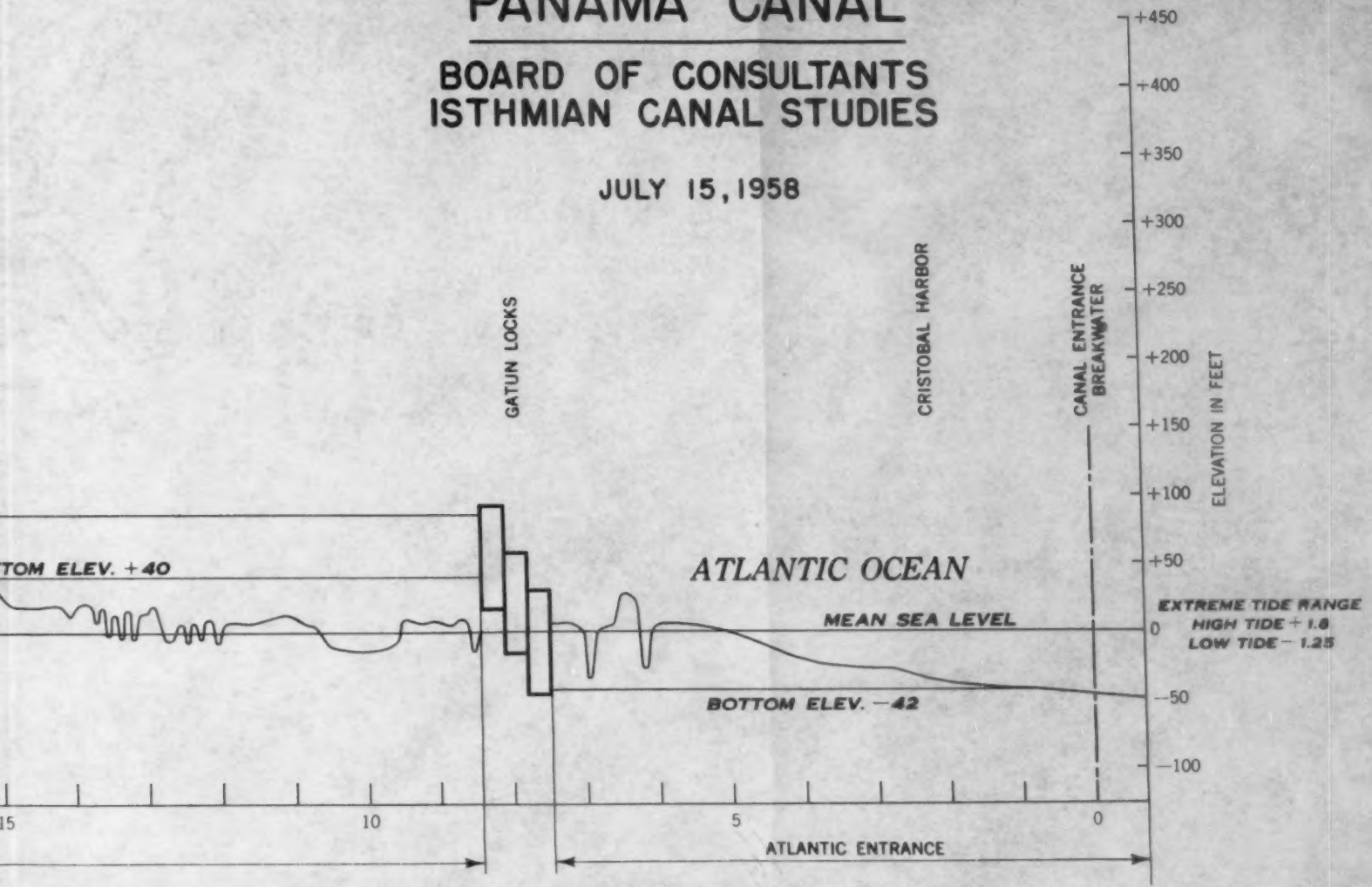
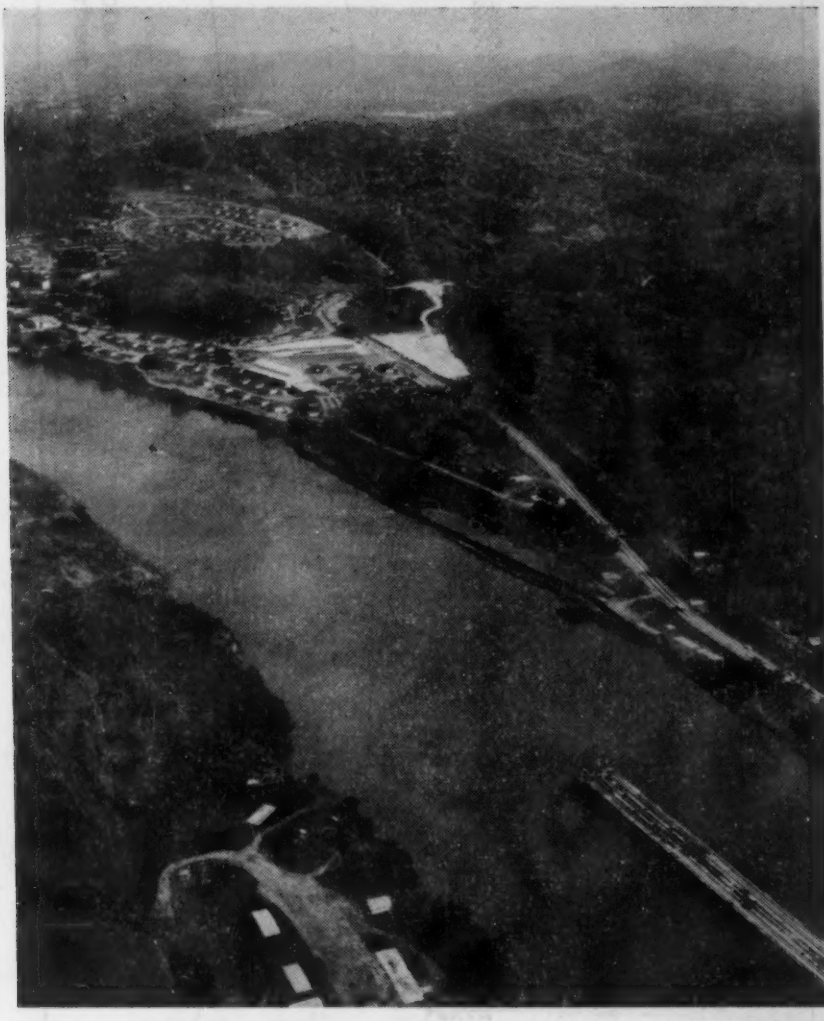


EXHIBIT No. 4



Mooring station, Pedro Miguel locks, east bank. (Note: Line marks *bottom* of prism line.)

EXHIBIT No. 4A

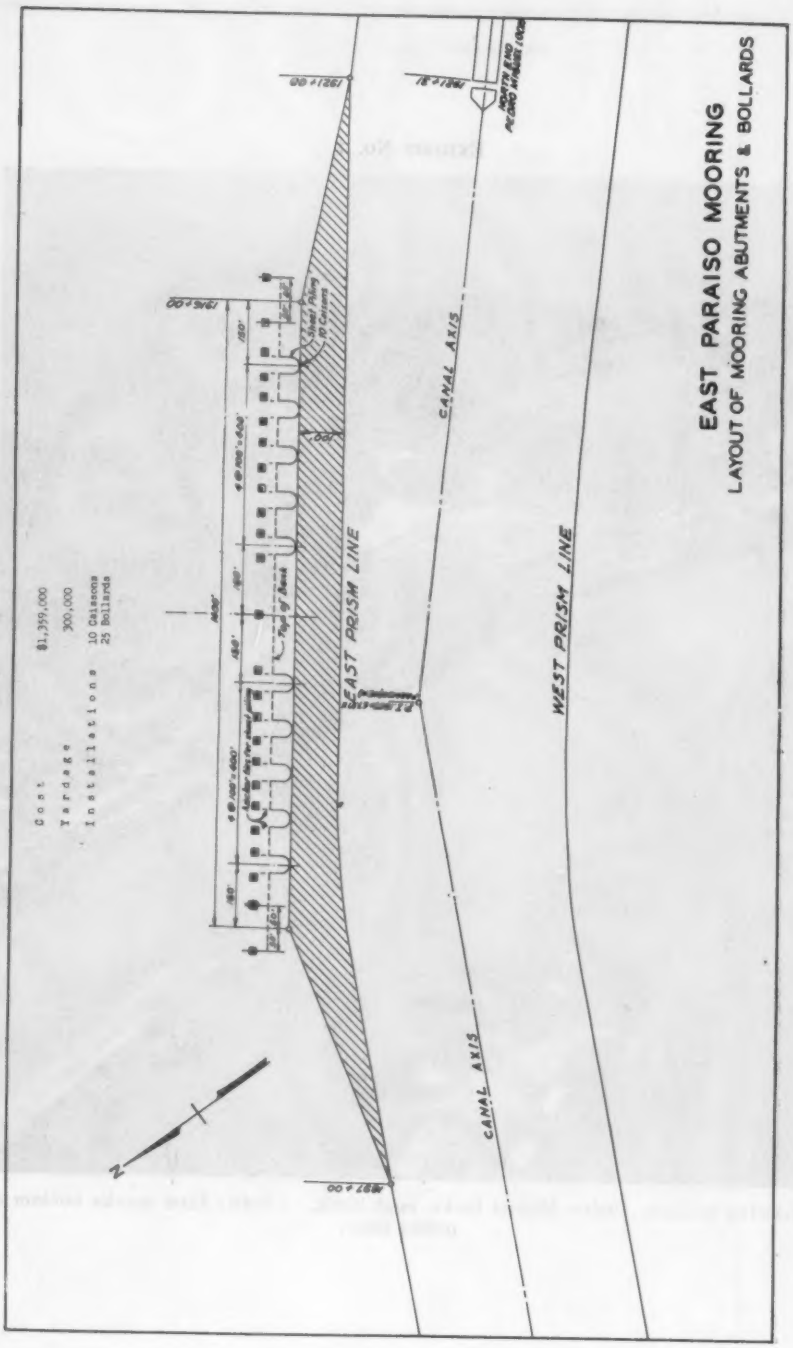


EXHIBIT No. 5

Widen Bend 1868. (Note: Line marks *bottom* of prism line.)

EXHIBIT No. 5A

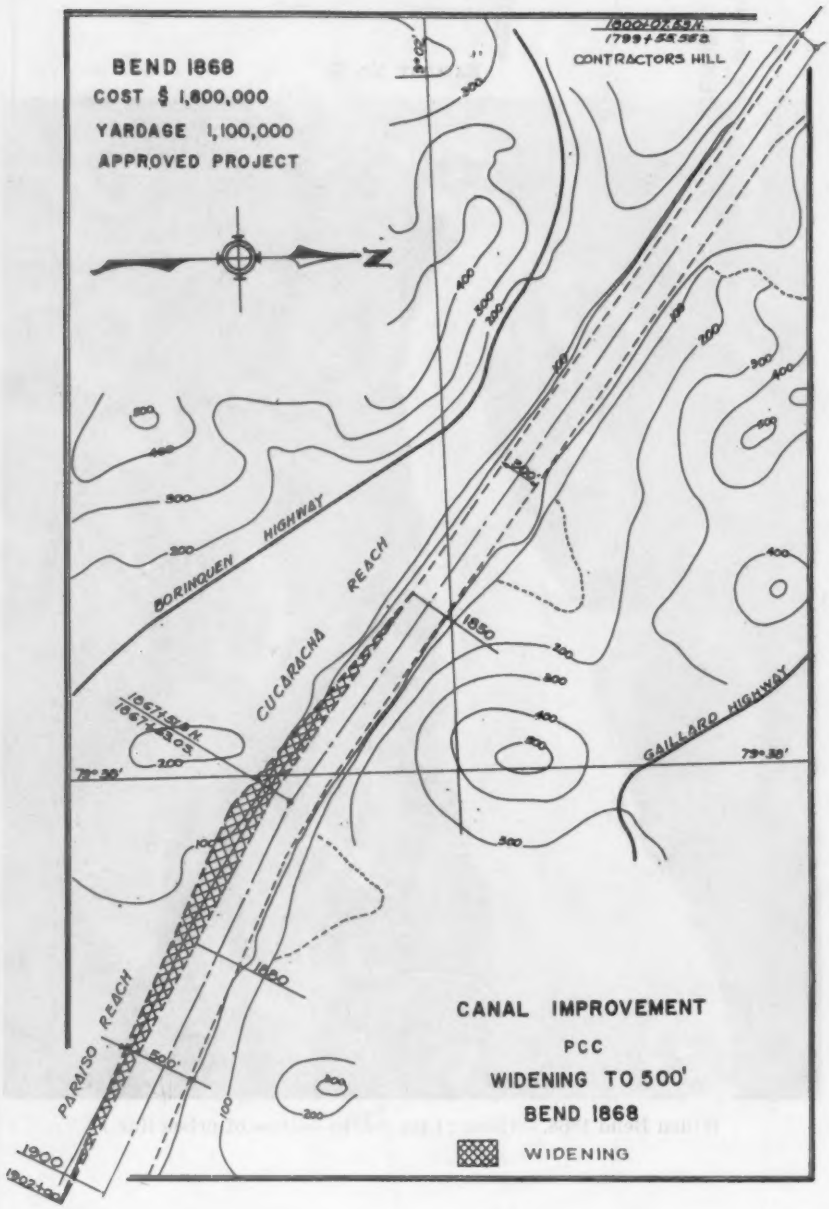


EXHIBIT No. 6

Widen Paraiso and Cucaracha Reaches. (Note: Line marks *bottom* of prism line.)

EXHIBIT No. 6A

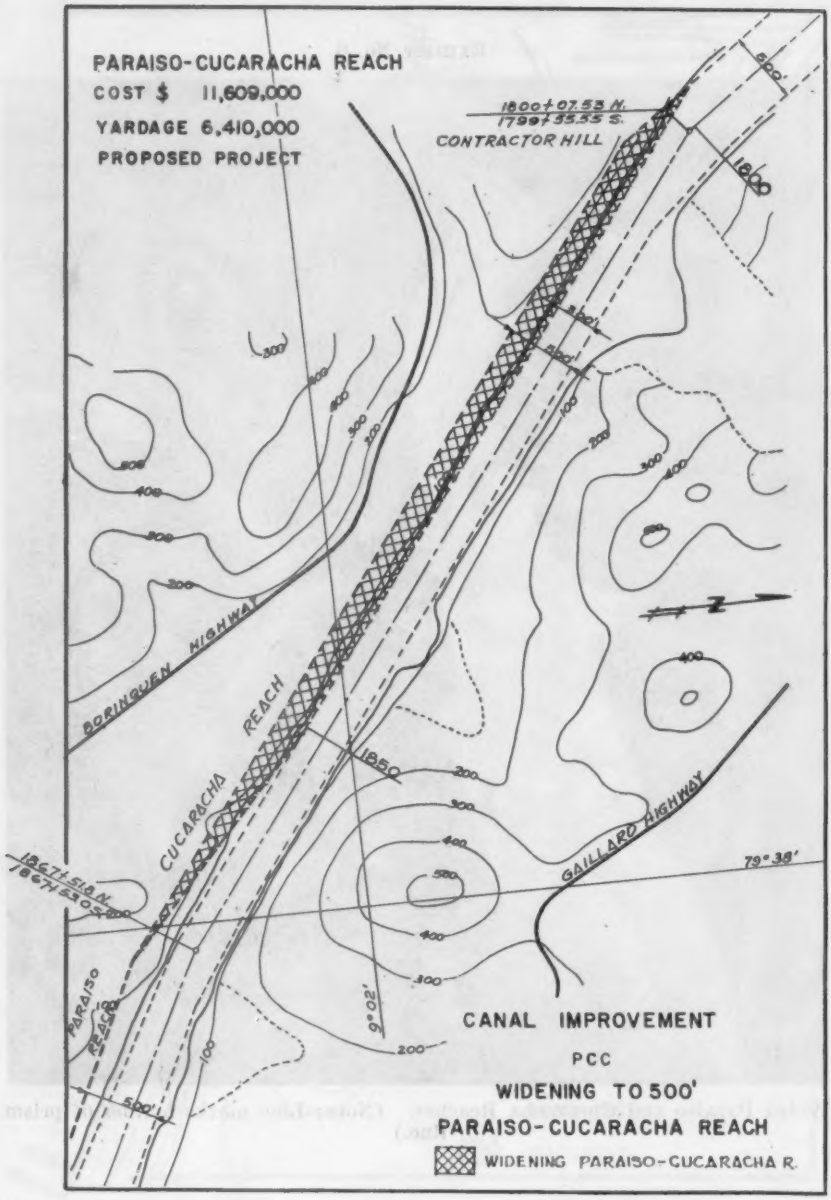
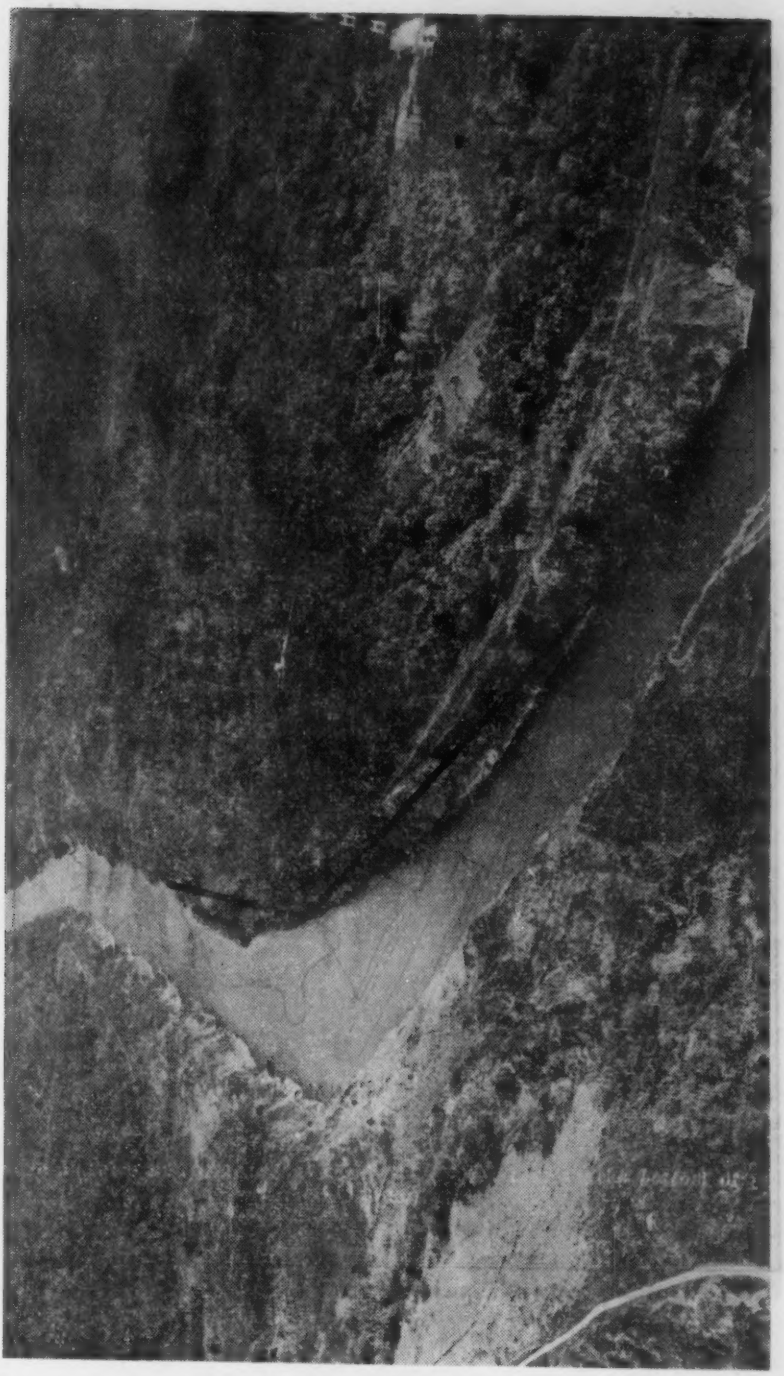


EXHIBIT No. 7



Widen Bend 1660. (Note: Line marks *bottom* of prism line.)

EXHIBIT No. 7A

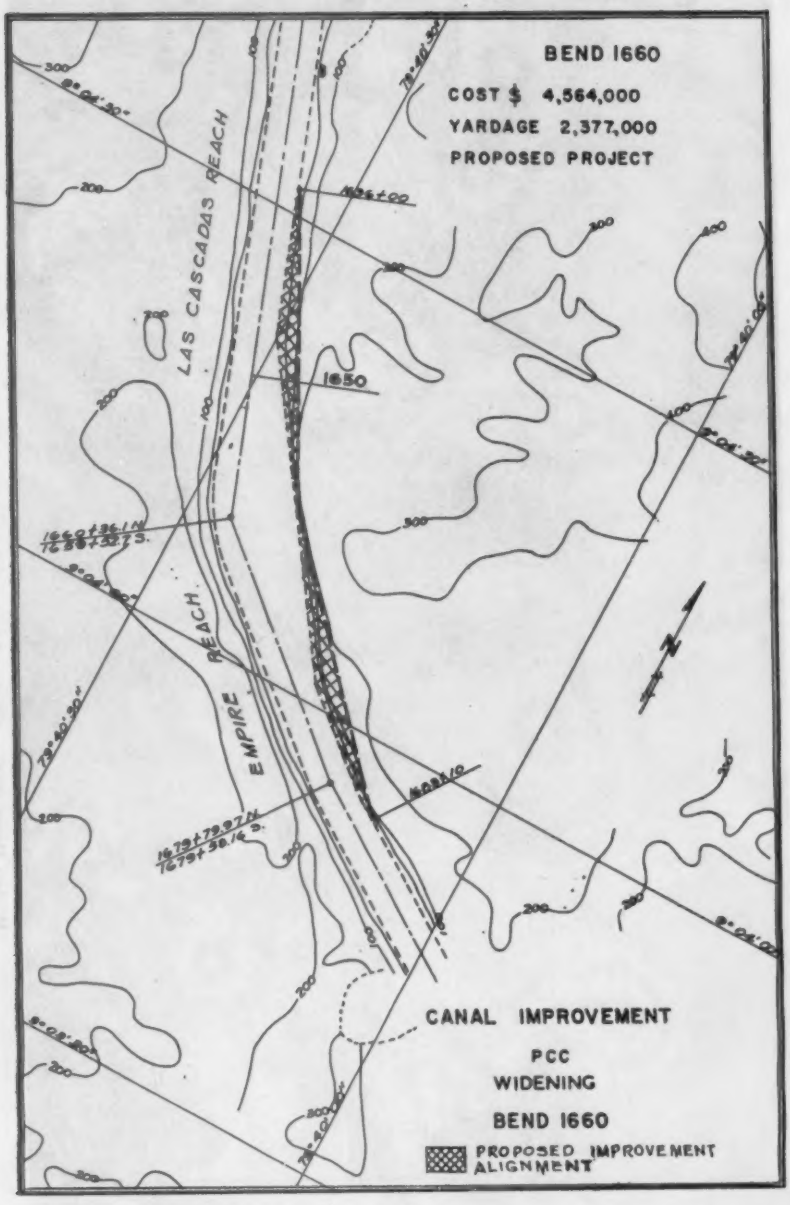
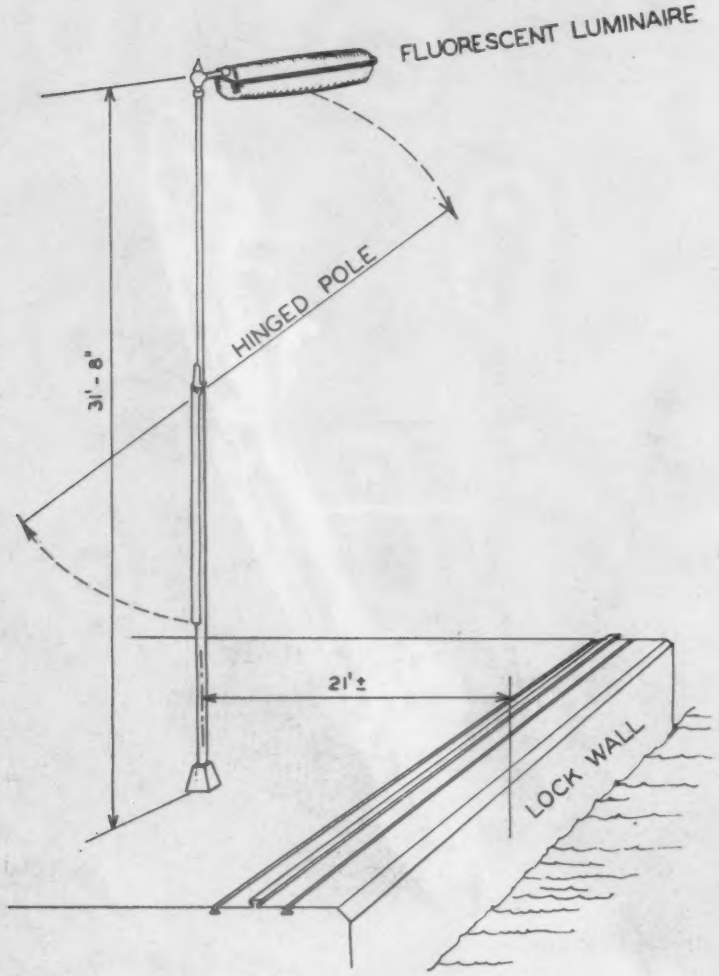


EXHIBIT No. 8

Photograph of ship passing through Gaillard Cut between Contractors Hill and Gold Hill.

EXHIBIT No. 9



EXPERIMENTAL LIGHTING
PEDRO MIGUEL LOCKS

EXHIBIT No. 10

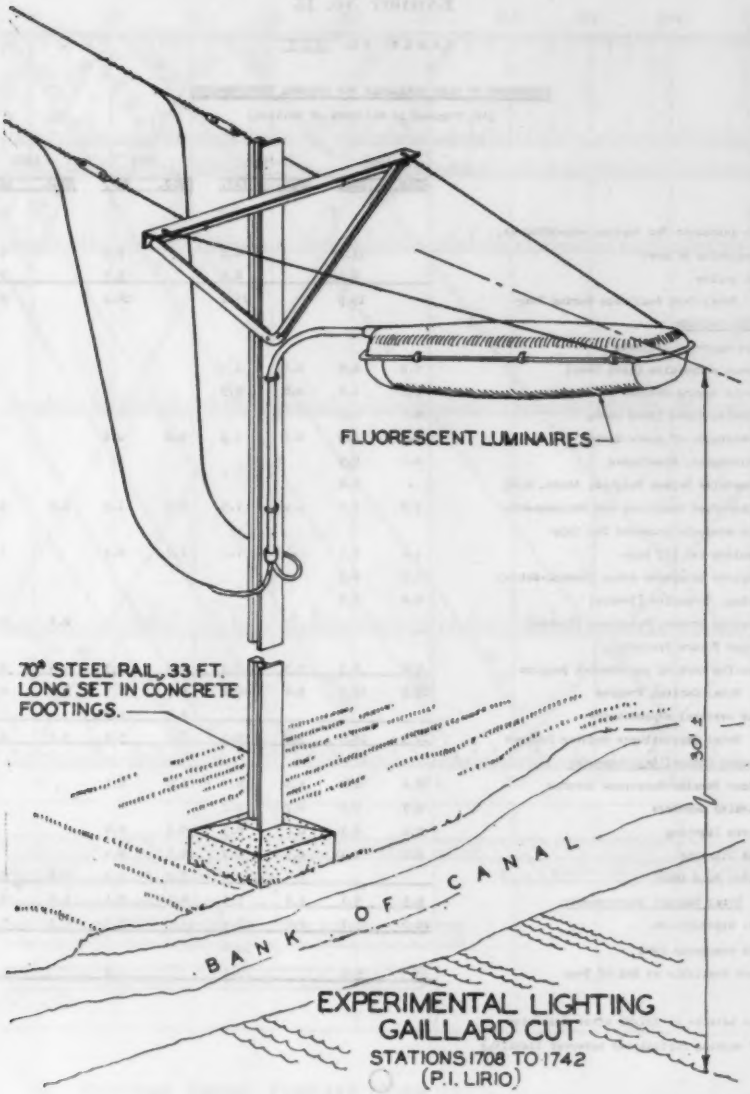


EXHIBIT NO. 13

TABLE NO. XXV

STATEMENT OF CASH AVAILABLE FOR CHANNEL IMPROVEMENTS

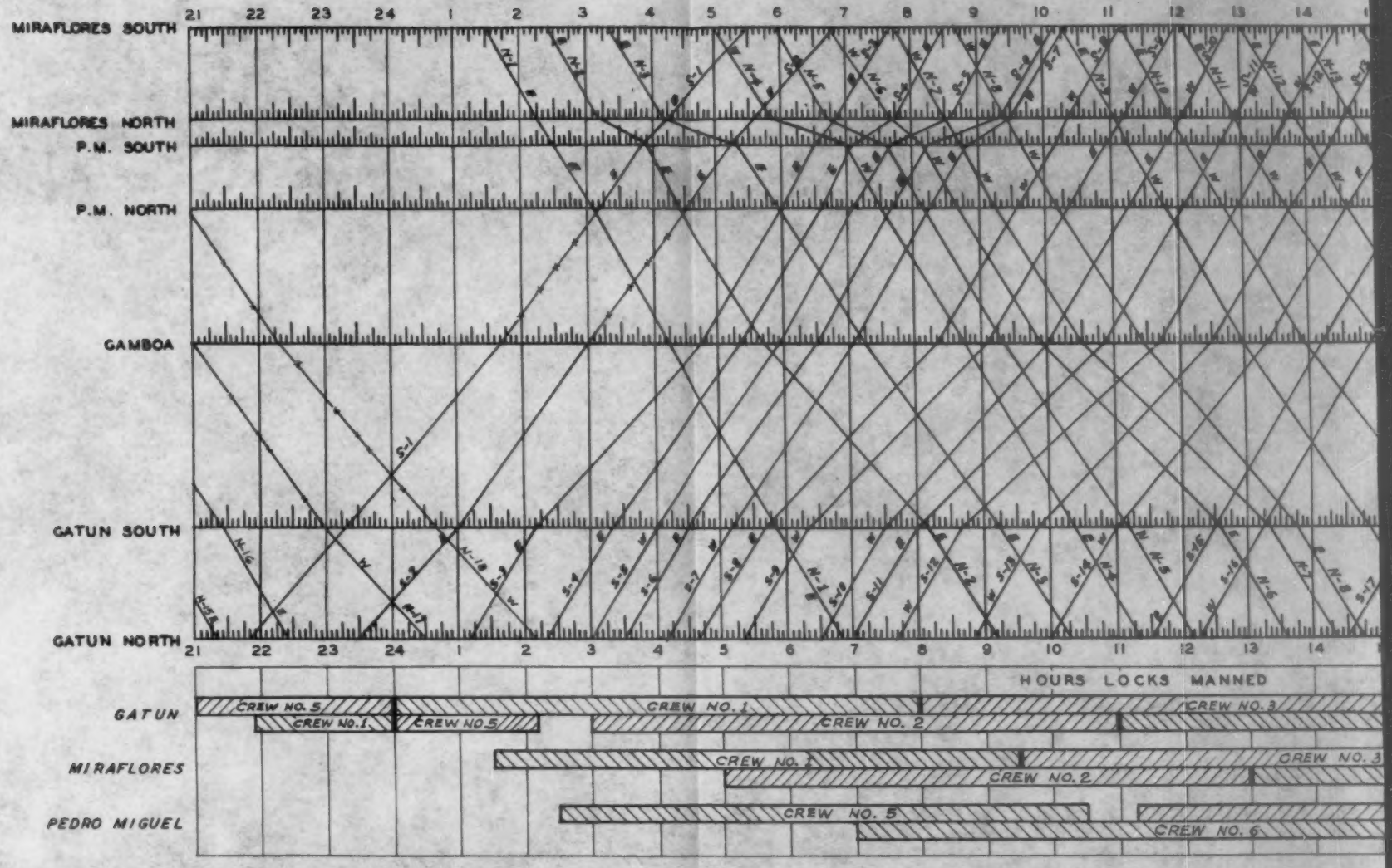
(All Figures in Millions of Dollars)

	1959		1960		1961		1962	
	Cash.	Int.	Cash.	Int.	Cash.	Int.	Cash.	Int.
CASH:								
Cash available for capital expenditures, beginning of year		11.1*		4.8		5.5		1.9
Cash inflow		8.8		8.8		8.7		7.7
Total Cash Available During Year		19.9		13.6		14.2		9.6
CAPITAL PROGRAM:								
Major approved projects								
Locks conversion (less loco)	0.2	2.6	0.1	1.1				
Locks towing devices and cranes	5.5	1.4	0.8	4.9				
Paraiso Curve (Bend 1868)	0.7	0.9						
Conversion of power system	0.7	1.9	0.7	1.3	0.2	0.6		
Switchgear, Miraflores	0.1	0.5						
Modernize Balboa Heights, Admin. Bldg.	-	0.8						
Unclassified Additions and Replacements	1.0	2.2	1.9	1.5	2.5	1.7	2.5	2.5
Major projects proposed for 1959:								
Replace two (2) tugs	1.2	0.1	-	1.1	1.2	0.1	-	1.1
Replace telephone cable (Gamboa-Gatun)	0.3	0.3						
Housing, Margarita (Treaty)	0.4	1.0						
Community Center, Margarita (Treaty)							2.6	2.6
Planned Future Projects:								
Pacific housing replacement program	0.4	0.3	0.3	0.3	0.3	0.3	0.4	0.4
Total Capital Program	10.5	12.0	3.8	10.2	4.2	2.7	5.5	6.6
Locks overhaul expenditures					2.5	2.5		
Total Expenditures Regular Program	10.5	12.0	3.8	10.2	6.7	5.2	5.5	6.6
Proposed Channel Improvements:								
Widen Paraiso-Cucaracha Reaches	8.6	2.2	2.0	6.7	1.0	2.7		
Paraiso moorings	0.7	0.7	0.7	0.7				
Locks lighting	0.1	0.1	0.6	0.3	0.1	0.4		
Cut lighting	0.1	0.1	0.5	0.2	0.1	0.4		
Widen Bend 1660					1.7	3.6	0.8	0.9
Total Channel Improvements	9.5	3.1	3.8	7.9	4.9	7.1	0.8	0.9
Total Expenditures	20.0	15.1	7.6	18.1	11.6	12.3	6.3	7.5
Add emergency fund				10.0				
Cash Available at End of Year		4.8		5.5		1.9		2.1

*Cash balance at 7/1/58 after deduction of working capital and interest liability

EXHIBIT No. 11

ANALYSIS OF CANAL OPERATI
36 LOCKAGES WITH CANAL IMPROVEME
WITH SYNCHRONIZED PERIODS OF OPERATI
ATLANTIC AND PACIFIC LOCKS



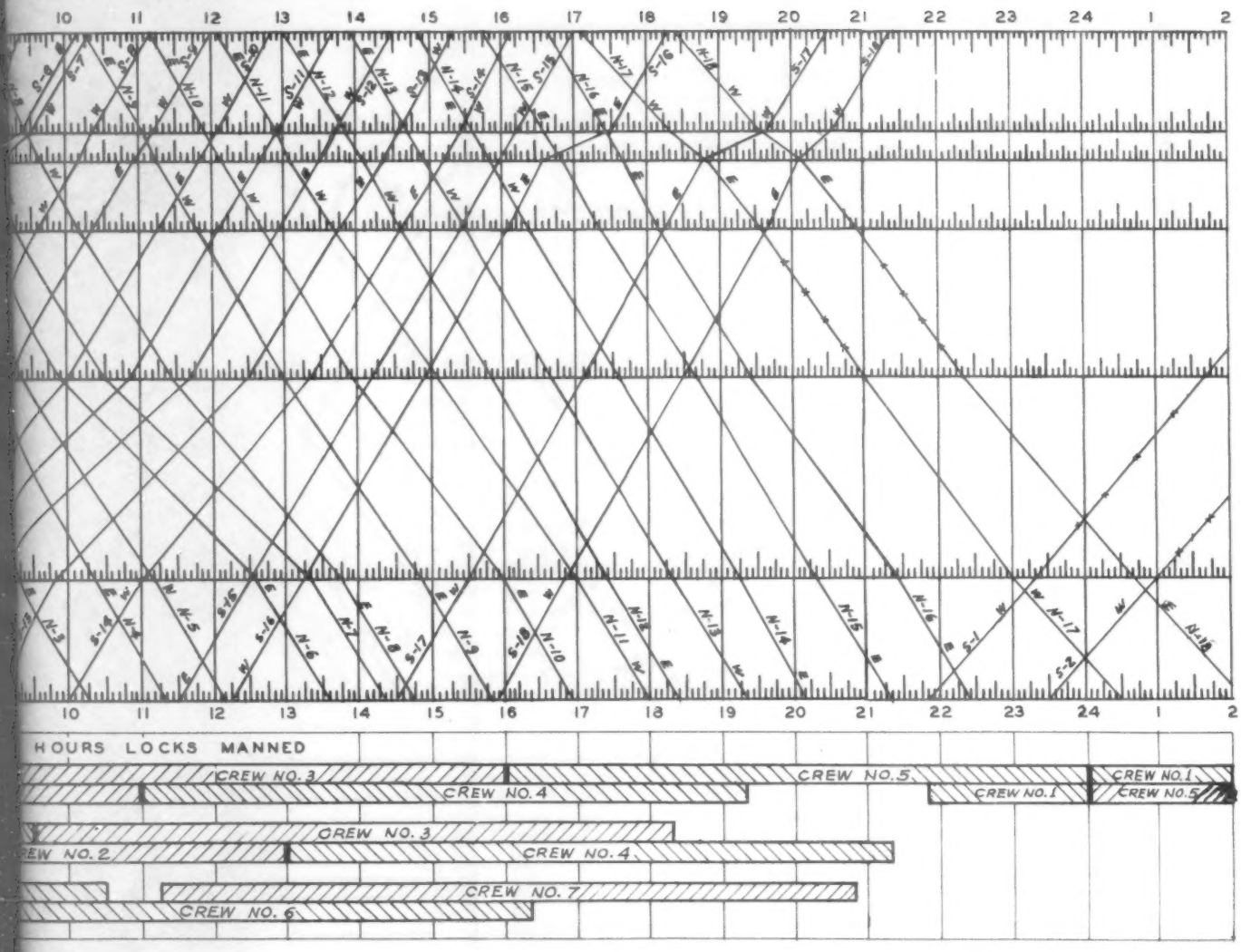
NOTES:

1. Improved Canal having adequate lighting of Locks and Gaillard Cut, Moorings north of Pedro Miguel and Gaillard Cut widened south of Culebra to Pedro Miguel.
2. Lockage Output – 18 Northbound, 18 Southbound or 36 Total
3. Number of Large Ships – 2 North, 2 South or 4 Total.
4. Number of Lockage Crews – 5 at Atlantic Locks
   7 at Pacific Locks

31216 O - 56 (Face p. 32) No. 1

EXHIBIT No. 11

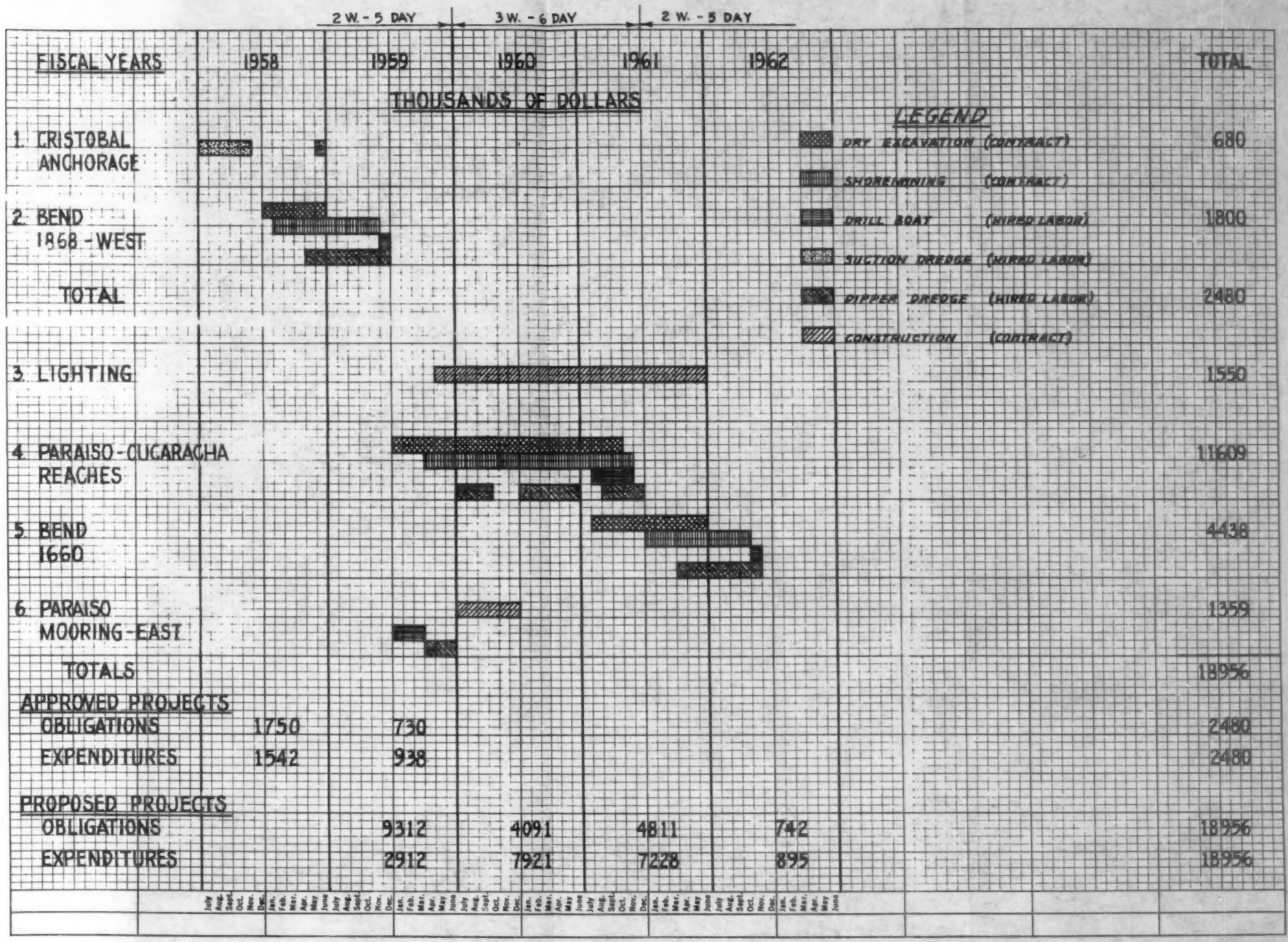
IS OF CANAL OPERATIONS
AGES WITH CANAL IMPROVEMENTS
HRONIZED PERIODS OF OPERATION AT
LANTIC AND PACIFIC LOCKS


10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 1 2
HOURS LOCKS MANNED
CREW NO. 3
CREW NO. 4
CREW NO. 5
CREW NO. 1
CREW NO. 5
CREW NO. 3
EW NO. 2
CREW NO. 4
CREW NO. 7
CREW NO. 6

f Pedro Miguel and

5. Average Canal Transit Time
   Northbound 6 hours, 28 minutes
   Southbound 6 hours, 25 minutes
   Average 6 hours, 27 minutes
6. X _____ X _____ X Large Ship Transits
   _____ Other Transits

EXHIBIT No. 12


2 W. - 5 DAY
3 W. - 6 DAY
2 W. - 5 DAY
FISCAL YEARS
1958
1959
1960
1961
1962
TOTAL
THOUSANDS OF DOLLARS
LEGEND
DRY EXCAVATION (CONTRACT)
SHORE MOORING (CONTRACT)
DRILL BOAT (HIRED LABOR)
SUCTION DREDGE (HIRED LABOR)
DIPPER DREDGE (HIRED LABOR)
CONSTRUCTION (CONTRACT)
1. CRISTOBAL ANCHORAGE 680
2. BEND 1868 - WEST 1800
TOTAL 2480
3. LIGHTING 1550
4. PARAISO - CUCARACHA REACHES 11609
5. BEND 1660 4438
6. PARAISO MOORING - EAST 1359
TOTALS 18956
APPROVED PROJECTS
OBLIGATIONS 1750 730 2480
EXPENDITURES 1542 938 2480
PROPOSED PROJECTS
OBLIGATIONS 9312 4091 4811 742 18956
EXPENDITURES 2912 7921 7228 895 18956
July Aug. Sept. Oct. Nov. Dec. Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec. Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec. Jan. Feb. Mar. Apr. May June

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DOCUMENTS EXPEDITING PROJECT

[No. 1]

LETTER FROM THE SECRETARY OF THE INTERIOR, TRANSMITTING THE REPORT COVERING ACTIVITIES UNDER THE FEDERAL AID IN FISH RESTORATION PROGRAM FOR THE FISCAL YEAR ENDING JUNE 30, 1956, PURSUANT TO SECTION II OF ACT OF CONGRESS APPROVED AUGUST 9, 1950 (64 STAT. 430, 16 U. S. C. 777)

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
Washington 25, D. C., December 17, 1956.

Hon. SAM RAYBURN,
Speaker of the House of Representatives,
Washington 25, D. C.

MY DEAR MR. SPEAKER: In accordance with the provisions of section II of the act of Congress approved August 9, 1950 (64 Stat. 430, 16 U. S. C. 777), I have the honor to transmit the enclosed report covering activities under the Federal aid in fish restoration program for the fiscal year ending June 30, 1956.

Sincerely yours,

FRED A. SEATON,
Secretary of the Interior.

A REPORT TO THE CONGRESS ON THE FEDERAL AID IN FISH RESTORATION PROGRAM FOR FISCAL YEAR 1956

Sport fish restoration activities maintained the same level and caliber of performance established in previous years. Income from the excise tax on fishing equipment dropped off slightly, but the amount of money obligated by the States in improvement projects reached a new high. As in past years, nearly half of the money obligated in the year was earmarked for studies designed to secure factual information as a guide to practical fish management. Purchases and leases of public fishing areas and access sites on public waters were given greater emphasis than previously, reflecting an awareness of the growing problem of providing the angler with a place to fish. Development activities retained an important place in the program, with principal emphasis on chemical rehabilitation of lakes, and a wide range of other types of activities claiming a substantial share of the funds.

Description of the program

The Federal aid in fish restoration program was authorized by the Dingell-Johnson Act (64 Stat. 430, 16 U. S. C. 777) approved August 9, 1950. The act provides for a cooperative program of fisheries research, development, and land purchases aimed at the conservation, expansion, and improved management of the Nation's sport fish

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resources. Funds are derived from the 10 percent Federal excise tax on sport fishing tackle. State fish and game departments are responsible for the selection, planning, and execution of restoration activities approved by the Secretary of the Interior. Upon satisfactory completion of the programed work, the Federal Government reimburses the States for up to 75 percent of total costs. All structures built and equipment purchased become the property of the States. The Fish and Wildlife Service is responsible for insuring that restoration projects are substantial and meet with the requirements of the law; that work is carried out with reasonable efficiency and in compliance with approved projects; and for apportionment of funds to the States and Territories in keeping with the formula established by law.

Summary of fish restoration activities

Funds apportioned to the States increased approximately $500,000 during the year to reach the largest amount yet available—$4,927,400. The Territorial allotment was $120,000. In addition to this broadened financial base, it is noteworthy that continually greater effort and more funds are being expended directly and indirectly in the search for more and better management techniques. Progress in providing fishermen with improved fishing will be measured by the success of this search. This past year, 159 investigational projects obligating $2,525,000, or 47 percent of the gross obligations, were conducted by 42 States and the Territories. More than half of the $500,000 increase in funds apprortioned the States was obligated for research projects.

As a companion to the research aspects of the program, 38 States and Alaska had 101 projects approved to carry out known management-development techniques such as lake rehabilitation through poisoning, stream habitat improvement, stream-bank planting, fencing to restrict grazing, and creation of new waters in deficient areas. These projects obligated $1,763,734, or 33 percent of gross funds obligated, one-fourth less than the amount obligated last year. Land acquisition, a partner in development work assuring the public of the right to benefit from such work by providing access among other things, comprised 96 projects which obligated $790,148 or 15 percent of the funds appropriated.

Funds apportioned to the States which are not obligated within a 2-year period revert to the fish research program of the Fish and Wildlife Service. During the past year only $23,082, one-half of 1 percent of the funds apportioned to the States, reverted, providing evidence of the attention paid to planning and budgeting.

During the fiscal year ending June 30, 1955, there were more than 18,854,809 paid license holders in the United States, an increase of 273,986 over the preceding year. In addition to this vast group of sportsmen there are those who are not required to purchase a license, thereby causing the total fishing public to be considerably in excess of the license holders.

While fishermen increased in number, funds available for the fish restoration program declined somewhat. During the year ending June 30, 1956, excise-tax collections amounted to $5,149,917 or a decrease of 4 percent over the preceding year. A similar change during the forthcoming year is not expected, nor is the considerable year-to-year increase of the past predicted.

The numerous and varied activities involved in fish restoration and management demand careful coordination and supervision. This function, together with the responsibility for initial selection and design of projects, is provided for by the coordination projects. This type of project was in operation in 37 States and Hawaii; $272,000, or 5 percent of all project obligations being devoted to these activities. Of the 39 coordination projects, 25 provided supervision for both fish and wildlife work.

Although considerable developmental restoration has been completed, maintenance costs were low, as only 0.4 percent of all project costs was involved. This amount, $18,827, financed 4 projects in 4 States. It is likely that maintenance operations will gradually increase as structures grow older and need repairs.

Details of the fish restoration program are presented in the discussion which follows and in the tables appended to this report. The amounts of the apportionments to the States and Territories and the States' shares are shown in table 1. An overall summary of apportionments, obligations, reversions, and balances for each State is contained in table 2. Additional details on this program and its wildlife counterpart may be secured from the report published jointly, at no cost to the Government, by the Wildlife Management Institute and the Sport Fishing Institute, entitled "Federal Aid in Fish and Wildlife Restoration, 1956." This report may be obtained from either institute or the United States Fish and Wildlife Service without cost.

Fisheries development

Restoration of fishing through the creation or improvement of fishing waters continued at the same pace of the past year. Thirty-one fishing lakes, with a total surface area of more than 2,500 acres, were approved for construction in 17 States. Included in these figures are 10 lakes where benefits to waterfowl and fur animals justified partial financing by wildlife funds. Approved reclamation projects involved 58 lakes and more than 15,000 acres of water in 11 States. Public-use facilities, including access roads, parking areas, boat-launching ramps, and sanitary facilities, were provided by 32 projects in 15 States. Eleven States had projects approved for aquatic weed control, and four States embarked on the installation of fishways, screens, and barriers.

Oregon continued her vigorous program of chemical rehabilitation of lakes infested with trash fish. Maine, Idaho, Minnesota, and Washington were other States carrying on similar programs.

Many States continued programs of providing new fishing waters in areas where fishing pressure is heavy or fishable waters are few. Alabama completed a dam in Dallas County which impounds a lake of 100 acres. Kansas finished work on a dam that will form 143 acres of warm water fish habitat; while West Virginia completed a dam impounding 41.3-acre Summit Lake. During the year, plans were approved for Vermont to create a 472-acre lake, Washington to increase the size of Deep Lake by 53 acres and to impound a 5-acre pond, and for Colorado to create 3 lakes of 70 acres, 41 acres, and 54 acres. In addition, projects were approved for Becks Pond, a 31-acre lake in Delaware; a 185-acre fishing lake in Copiah County, Miss.; and Papoose Lake, a 183-acre lake near Chicago. Verdon Lake, an impoundment of 33 acres in Nebraska, is in the process of

being enlarged. Ohio will improve 34-acre Zepernick Lake and construct a dam to impound 40 acres in Monroe County. Lower Woods Pond, a 91-acre lake in Pennsylvania, was bought and enlarged. Laurel Hill Lake in Tennessee, 327 acres in size and one of the larger sport fishing lakes created with Federal aid funds, will have a dam 846 feet long and 75 feet high.

Several States continued projects concerned with watershed stabilization or stream improvement alone. Michigan, Rhode Island, California, and Idaho were outstanding in this activity.

Control of noxious vegetation to improve fishing conditions in plant-choked waters is an important management tool. Although control methods have not been developed for all types of aquatic vegetation, the number of effective herbicides is steadily increasing. States involved in aquatic weed control were California, Connecticut, Delaware, Iowa, New York, Rhode Island, Tennessee, Texas, South Carolina, Utah, and Wisconsin.

Construction of roads, parking areas, boat-launching ramps, sanitary facilities, trash barrels and burning pits, and provision of drinking water, fences, signs, and other features ensuring maximum use of access areas continued to receive emphasis. Fifteen States had 34 projects of this type in operation, while an additional 10 projects of 9 States contained provision for such features. Provision of these minimum basic facilities will protect the health of sportsmen and their families and add greatly to their comfort and welfare.

Fisheries investigations

The widespread recognition of the importance and practical value of scientific investigational activities is clearly evident by the large number of Federal-aid projects which were in operation during the past year. Investigational projects increased in number from 154 to 159 and in moneys obligated to a new high of $2,525,000, which represented 47 percent of total project obligations. Thirty-two new projects were established, investigational activities being underway in 42 States as well as Alaska, Hawaii, Puerto Rico, and the Virgin Islands.

The growing maturity of the program is reflected by the shift from basic inventory studies to more specific and specialized fields. Greater emphasis has been placed on experimental management, development of techniques, and specific problems. Of the 159 projects in operation during the past year, 13 were combined studies of both fish and wildlife.

Since all fishery investigational activities are associated with establishing and maintaining high-quality fishing, creel census studies which seek to measure the sport fish harvest, are important. The prominence of this type of investigation is attested by the fact that 53 projects involving creel census activities were in operation in more than half of the States. These investigations varied with respect to design and objectives but can be generally classified as inventory studies to determine quantitatively and qualitatively the type of fishing provided and to evaluate the results of management techniques and practices.

Typical of the valuable information obtained through creel census studies is that secured in Minnesota, where it was learned that during 1955 there were 150,000 fishing trips to the 14 lakes censused and that over 175,000 pounds of fish were caught. Fewer northern pike, a

highly important game fish, were caught than in past years, but those caught were heavier. In California, creel census studies were carried on as part of several projects. Information was obtained regarding steelhead trout and salmon fishing in the Sacramento River; the comparative return of brown trout, brook trout, and rainbow trout in certain streams and lakes; fishing success for sturgeon and striped bass; as well as the return of trout in relation to size of fish and time of stocking. Creel census studies were also in operation in Delaware, Connecticut, Idaho, Tennessee, New Jersey, Texas, Nevada, South Carolina, Maine, and elsewhere. Numerous creel censuses are to be expected in investigational and management programs since an understanding of fishing success is of paramount importance in evaluation of the contribution to improvement of fishing.

Interest continued in the application of electricity in fisheries management and research. Wisconsin conducted studies of the relationship between electrical factors and electrode design, as well as the electrical energy which fish receive when in various electrical fields. It was found that carp responded with considerable activity to comparatively low voltage gradients. Further study is being carried on to explore the possibilities for concentrating carp with low voltage gradients for removal purposes. Wisconsin also found that presence of fish modified, to a variable extent, the entire electric field pattern previously existing in the water into which the fish were immersed. In addition, a method was developed for measuring fish resistivities. This type of information is fundamental to development of new and improved techniques and equipment.

The improvement of fish culture operations was the objective of investigations in Montana, New York, New Mexico, and Washington. Montana completed a Trout Hatchery Manual containing information on nutrition as well as diagnosis and treatment of diseases. Approximately 300 subjects are included, the bibliographic sections containing over 2,000 references. While this manual was prepared particularly for Montana fish culturists, it will be a valuable guide for workers elsewhere. New York projects were concerned with refinement of trout culture procedures, development of new techniques, and selective breeding for resistance to disease.

To permit better utilization of food fed at a hatchery and to reduce labor costs, a device was developed by New York technicians which scatters food over a pond using pulsating compressed air. A ricer for feeding trout in troughs was also developed. These devices will pay dividends by reduced labor costs and more efficient consumption of food by the fish. In the process of selectively breeding trout for resistance to disease, various strains of brook and brown trout were utilized. While immunity has not been developed, promising indications were observed regarding resistance to ulcer disease.

As the Nation grows and industry demands increase, pollution problems become more acute. Louisiana conducted studies in the Ouachita River in the northern part of the State where industrial, municipal, and oilfield pollutants enter the stream. The project was designed to measure the effect of these widespread pollutants on fish populations and fishing success. The study is a pilot project and findings will be applicable elsewhere. Texas made considerable progress in delineating polluted waters and in determining the causes. A study of salt pollution resulting from oil field operations may pave

the way for new control of this pollutant and the prevention of further stream destruction. The study revealed that by chemical action much of the salt believed to be stored in reservoirs enters the streams through underground channels. Insecticide pollution studies were underway in Maine and were initiated by Montana where fish mortality was observed coincidental with spraying operations for control of spruce budworm. There is much interest in both budworm control and fishing in the areas concerned, consequently investigations were designed to find ways to control the harmful insect and at the same time preserve the fishing. The Maine studies indicated that the mortality in fish was probably the result of consuming insect larvae affected by the insecticide, DDT.

The effort devoted to development of successful techniques for the control of rough fish is assuming great proportion. Sixteen States conducted twenty-nine projects wholly or partly directed toward rough fish control. Mechanical and electrical removal of adult and young fish, mechanical or chemical destruction of spawn, selective poisoning and use of poison-food pellets are being explored. Success, so far confined to specific situations, has nonetheless been encouraging.

South Dakota, in cooperation with the Corps of Engineers, fluctuated water levels in new Fort Randall Reservoir, thereby preventing successful reproduction of a large portion of the rough fish population while permitting game species to spawn. Repetition of this process in coming years may prove effective in preventing the eventual domination of fish populations in this reservoir by rough fish.

During the course of the fish restoration program, basic surveys of aquatic resources have provided valuable foundations on which to build sound investigational and management activities. While much has been accomplished, work remains to be done, as evidenced by the continuation of survey projects. Studies in Florida were concerned with determining the composition of the fish population, as well as the physical and chemical characteristics of public waters. A similar project in Texas resulted in the location of waters apparently suitable for the production of game fish which are now lacking. The Arkansas survey provided new information concerning the distribution of game fish, condition of streams, management needs, and the location of waters practically unknown to fishermen. Survey activities in Maine provided needed data on the suitability of certain waters for trout and the establishment of trout in other areas. The rainbow trout population in the Kennebec River system received considerable attention. It was found that natural reproduction adequately supports the fishing and that conditions are most suitable for rainbow trout. With this knowledge, efficient management is made possible. In Utah, many unmapped lakes and ponds exist. With the aid of aerial photographs these waters are being inventoried rapidly and economically. New Mexico conducted a basic survey of the Canadian, Cimarron, and lower Pecos Rivers, as well as other waters of the State. Indiana, Nebraska, and South Dakota carried on similar survey projects.

In many waters, fishing is unsatisfactory as a result of weed growths. As new herbicides are developed their usefulness for controlling aquatic vegetation is worthy of study. New Jersey, New York, West Virginia, and Texas were engaged in research in this field.

It has been recognized for many years that there is a close relationship between the characteristics of a watershed and the nature of fishing within it. While this seems an established fact, watershed improvement is costly and there are many problems. Three States had projects designed to determine improvement needs and to evaluate the effectiveness of appropriate developments including erosion control, stream-flow alteration, as well as construction of pools and deflectors. The Ohio and Wisconsin projects were designed to determine physical and biological changes in streams following watershed and stream treatments, as well as the degree of improvement in fishing success. In Michigan the studies were concerned principally with the determination of improvement needs and means for achieving them.

Interest in marine sport fishing continued to grow with projects in nine States, as well as in Puerto Rico, Hawaii, and the Virgin Islands. Greatest emphasis was on striped bass along the Atlantic coast where seven States conducted investigations regarding this species. These projects were coordinated with and formed the backbone of the striped bass program of the Atlantic States Marine Fisheries Commission. Through this coordinated effort, needed information was obtained regarding movement, spawning, growth, and abundance of this important game fish. Additional evidence was obtained which substantiates and permits clearer definition of the earlier determination that several populations of striped bass exist along the coast between which there is little interchange. On the Pacific coast, California obtained samples of the striped bass, finding an increase in abundance and wider distribution of young fish. California also carried on studies of yellowtail, salmon, and sturgeon, and conducted a census of surf fishing. Hawaii investigated the distribution and abundance of important reef fishes by an underwater survey and creel census. Puerto Rico secured life history and creel data on groupers, grunts, mangrove snapper, and other marine game fish. Delaware continued an investigation of marine sport fishing stressing study of the grey squeteague. New York's studies of grey squeteague, fluke, and striped bass also continued.

Acquisition of fishing areas

Land acquisition provides excellent long-term insurance for the fishing public. By this means, lakes are acquired, extensive frontage on high-quality fishing streams purchased, and small access points bought so the public may not be excluded from launching boats on desirable waters. Land purchases also provide the sites on which new waters may be impounded by the States. The ever-expanding demand for fishing will increase the value of the areas acquired.

Unfortunately, the most urgently needed lands are often the most expensive. It is ironical that the expanding needs of our great centers of population have already priced certain desirable areas beyond reasonable value for fishing, while these same population centers create the most concentrated fishing. Attempting to satisfy the pressing needs places a terrific burden on limited State finances which must also be spread over other phases of its program. But, despite this, 20 States had projects approved for the acquisition of 6,358 acres and for the leasing of an additional 56,846 acres. Average cost per acre was $91.33, compared to $122.64 last year. Thirteen States had combined fish and wildlife projects approved for the acquisition of 10,443 acres at an average cost of $65.70 per acre.

TABLE NO. 1.—*Apportionment of funds to the States, Alaska, Hawaii, Puerto Rico, and the Virgin Islands for Federal aid in fish restoration projects for fiscal year 1956, pursuant to the Dingell-Johnson Act approved Aug. 9, 1950 (64 Stat. 430), based upon an appropriation of $5,347,425.43*

States	Square miles	Apportionment on basis of area	Paid license holders, fiscal year 1954	Apportionment on basis of license holders	Total Federal apportionment	State contributions	Grand total for projects
Alabama	52,206	$29,874.73	225,574	$36,023.42	$65,898.15	$21,966.05	$87,864.20
Arizona	113,909	65,184.08	132,824	21,211.55	86,395.63	28,798.54	115,194.17
Arkansas	53,102	30,387.46	396,782	63,364.76	93,752.22	31,250.74	125,002.96
California	162,263	98,548.00	1,256,004	147,822.00	246,370.00	82,123.33	328,493.33
Colorado	104,247	59,655.03	405,457	64,750.13	124,405.16	41,468.38	165,873.54
Connecticut	5,297	19,709.60	107,550	29,564.40	49,274.00	16,424.67	65,698.67
Delaware	2,294	19,709.60	10,229	29,564.40	49,274.00	16,424.67	65,698.67
Florida	65,388	37,418.09	338,623	54,076.97	91,495.06	30,498.35	121,993.41
Georgia	60,685	34,726.81	407,441	65,066.97	99,793.78	33,264.59	133,058.37
Idaho	83,557	47,815.24	243,748	38,925.74	86,740.98	28,913.66	115,654.64
Illinois	57,926	33,147.98	788,743	125,959.63	159,107.61	53,035.87	212,143.48
Indiana	36,519	20,897.89	590,816	94,351.35	115,249.24	38,416.41	153,665.65
Iowa	56,280	32,206.06	404,068	64,528.31	96,734.37	32,244.79	128,979.16
Kansas	82,276	47,082.20	235,439	37,598.82	84,681.02	28,227.01	112,908.03
Kentucky	40,395	23,115.92	414,904	66,258.79	89,374.71	29,791.57	119,166.28
Louisiana	51,478	29,458.13	205,049	32,745.64	62,203.77	20,734.59	82,938.36
Maine	35,243	20,167.70	199,440	31,849.90	52,017.60	17,339.20	69,356.80
Maryland	11,933	19,709.60	116,988	29,564.40	49,274.00	16,424.67	65,698.67
Massachusetts	9,616	19,709.60	222,983	29,564.40	49,274.00	16,424.67	65,698.67
Michigan	96,791	55,388.36	1,159,925	185,236.16	240,624.52	80,208.17	320,832.69
Minnesota	86,280	98,548.00	1,277,917	147,822.00	246,370.00	82,123.33	328,493.33
Mississippi	48,181	27,571.43	208,140	33,239.26	60,810.69	20,270.23	81,080.92
Missouri	69,674	39,870.74	565,201	90,260.72	130,131.46	43,377.15	173,508.61
Montana	147,138	84,199.28	222,087	35,466.55	119,665.83	39,888.61	159,554.44
Nebraska	77,237	44,198.64	232,404	37,114.14	81,312.78	27,104.26	108,417.04
Nevada	110,540	63,256.18	55,228	8,819.73	72,075.91	24,025.30	96,101.21
New Hampshire	9,346	19,709.60	124,376	29,564.40	49,274.00	16,424.67	65,698.67
New Jersey	9,030	19,709.60	148,120	29,564.40	49,274.00	16,424.67	65,698.67
New Mexico	121,666	69,623.00	110,289	17,612.79	87,235.79	29,078.60	116,314.39
New York	54,613	31,252.13	817,926	130,476.33	161,728.46	53,909.49	215,637.95
North Carolina	55,802	31,932.53	342,740	54,734.44	86,666.97	28,888.99	115,555.96
North Dakota	70,665	40,437.84	75,209	12,010.63	52,448.47	17,482.82	69,931.29
Ohio	44,679	25,567.42	885,254	141,372.12	166,939.54	55,646.51	222,586.05
Oklahoma	69,919	40,010.94	408,774	65,279.85	105,290.79	35,096.93	140,387.72
Oregon	97,917	56,032.71	320,135	51,124.49	107,157.20	35,719.07	142,876.27
Pennsylvania	46,068	26,362.28	731,484	116,815.56	143,177.84	47,725.95	190,903.79
Rhode Island	1,682	19,709.60	20,375	29,564.40	49,274.00	16,424.67	65,698.67
South Carolina	33,329	19,072.42	302,705	48,340.98	67,413.40	22,471.13	89,884.53
South Dakota	77,047	44,089.92	127,565	20,371.71	64,461.63	21,487.21	85,948.84
Tennessee	42,246	24,175.15	768,480	122,723.70	146,898.85	48,966.28	195,865.13
Texas	270,639	154,872.36	423,772	67,674.98	222,547.34	74,182.45	296,729.79
Utah	84,916	48,592.93	141,028	22,521.70	71,114.63	23,704.88	94,819.51
Vermont	9,609	19,709.60	105,907	29,564.40	49,274.00	16,424.67	65,698.67
Virginia	42,516	24,329.65	359,736	57,448.64	81,778.29	27,259.43	109,037.72
Washington	70,916	40,581.47	484,518	77,375.91	117,957.38	39,319.13	157,276.51
West Virginia	24,181	19,709.60	194,958	29,564.40	49,274.00	16,424.67	65,698.67
Wisconsin	66,216	37,891.91	1,080,692	172,582.91	210,474.82	70,158.27	280,633.09
Wyoming	97,914	56,030.99	184,106	29,401.12	85,432.11	28,477.37	113,909.48
Total	3,121,371	1,970,960.00	18,580,813	2,956,440.00	4,927,400.00	1,642,466.67	6,569,866.67
Deductions for projects in Alaska $75,000; Hawaii $25,000; Puerto Rico $10,000; and the Virgin Islands $10,000					120,000.00		120,000.00
Deduction for the administration of the act					300,025.43		
Total appropriation					5,347,425.43		6,689,866.67

NOTE.—Sec. 4 of the act places a maximum limitation of 5 percent on States, affecting California and Minnesota, and a minimum apportionment of 1 percent affecting Connecticut, Delaware, Maryland, Massachusetts, New Hampshire, New Jersey, Rhode Island, Vermont, and West Virginia.

TABLE NO. 2.—*Summary of Federal aid in fish restoration apportionments, reversions, obligations and balances for fiscal year 1956*

State or Territory	Balance July 1, 1955	Apportionment fiscal year 1956	Reversions to Fish and Wildlife Service	Net project obligations	Balance June 30, 1956
Alabama	$10,063.59	$65,898.15		$75,658.44	$303.30
Arizona	35,979.29	86,395.63		72,395.31	49,979.61
Arkansas	39,279.19	93,752.22		69,541.21	63,490.20
California	4,971.93	246,370.00		233,459.11	17,882.82
Colorado	79,310.89	124,405.16		113,869.02	89,847.03
Connecticut	11,800.43	49,274.00		58,641.64	2,432.79
Delaware	37,297.83	49,274.00		86,571.83	0
Florida	0	91,495.06		89,100.90	2,394.16
Georgia	17,822.80	99,793.78		85,656.65	31,959.93
Idaho	14,368.65	86,740.98		97,401.62	3,708.01
Illinois	0	159,107.61		18,674.58	140,433.03
Indiana	88,998.74	115,249.24	$2,039.66	136,362.46	65,845.86
Iowa	31,909.77	96,734.37		108,156.47	20,487.67
Kansas	0	84,681.02		41,897.18	42,783.84
Kentucky	36,659.01	89,374.71		71,577.87	54,455.85
Louisiana	0	62,203.77		62,203.77	0
Maine	0	52,017.60		52,017.60	0
Maryland	10,363.30	49,274.00		31,109.70	28,527.60
Massachusetts	15,572.06	49,274.00		22,533.47	42,312.59
Michigan	49,789.43	240,624.52		173,880.96	116,532.99
Minnesota	79,407.73	246,370.00		182,369.86	143,407.87
Mississippi	35,957.09	60,810.69		71,597.95	25,169.83
Missouri	8,004.25	130,131.46		138,135.71	0
Montana	0	119,665.83		73,831.51	45,834.32
Nebraska	20,582.49	81,312.78		58,690.31	43,204.96
Nevada	5,483.71	72,075.91		42,157.71	35,401.91
New Hampshire	0	49,274.00		49,274.00	0
New Jersey	18,450.97	49,274.00		63,382.24	4,342.73
New Mexico	14,446.14	87,235.79		85,976.10	15,705.83
New York	140,139.32	161,728.46	8,078.03	163,475.76	130,313.99
North Carolina	1,051.40	86,666.97		77,628.70	10,089.67
North Dakota	20,593.13	52,448.47		24,585.49	48,456.11
Ohio	122,843.70	166,939.54		221,597.35	68,185.89
Oklahoma	26,775.06	105,290.79		80,502.51	51,563.34
Oregon	32,694.12	107,157.20		103,142.31	36,709.01
Pennsylvania	50,452.80	143,177.84		107,719.91	85,910.73
Rhode Island	42,286.41	49,274.00	11,379.29	30,907.12	49,274.00
South Carolina	37,211.28	67,413.40		57,197.84	47,426.84
South Dakota	35,846.52	64,461.63		61,243.08	39,065.07
Tennessee	95,156.93	146,898.85		145,321.72	96,734.06
Texas	5,999.02	222,547.34		170,287.61	58,258.75
Utah	28,408.26	71,114.63		65,801.61	33,721.28
Vermont	24,514.39	49,274.00		55,737.82	18,050.57
Virginia	2,103.25	81,778.29	420.68	40,633.54	42,827.32
Washington	80,577.83	117,957.38		147,269.11	51,266.10
West Virginia	13,349.04	49,274.00		30,447.60	32,175.44
Wisconsin	3,107.89	210,474.82		213,582.71	0
Wyoming	34,040.94	85,432.11		89,902.60	29,570.45
Alaska	38,914.18	75,000.00		113,914.18	0
Hawaii	11,570.03	25,000.00		34,729.44	1,840.59
Puerto Rico	0	10,000.00	1,165.12	8,834.88	0
Virgin Islands	4.37	10,000.00		10,004.37	0
Total	1,514,159.16	5,047,400.00	23,082.78	4,520,592.44	2,017,883.94

DOCUMENTS EXPEDITING PROJECT

[No. 2]

REPORTS FROM THE DEPARTMENT OF THE NAVY, TREASURY DEPARTMENT, UNITED STATES ATOMIC ENERGY COMMISSION, AND DEPARTMENT OF COMMERCE, ON H. R. 9196, A BILL TO AUTHORIZE THE CONSTRUCTION OF A NUCLEAR-POWERED ICEBREAKING VESSEL FOR OPERATION BY THE UNITED STATES COAST GUARD, AND FOR OTHER PURPOSES

DEPARTMENT OF THE NAVY,
OFFICE OF THE SECRETARY,
OFFICE OF LEGISLATIVE LIAISON,
Washington, D. C., January 15, 1958.

Hon. HERBERT C. BONNER,
Chairman, Committee on Merchant Marine and Fisheries,
House of Representatives, Washington, D. C.

MY DEAR MR. CHAIRMAN: Your request for comment on H. R. 9196, to authorize the construction of a nuclear-powered icebreaking vessel for operation by the United States Coast Guard, and for other purposes, has been assigned to this Department by the Secretary of Defense for the preparation of a report thereon expressing the views of the Department of Defense.

This bill would authorize the appropriation of funds to the Treasury Department, United States Coast Guard, and the Atomic Energy Commission for the construction of a nuclear-powered icebreaking vessel for operation in icebound waters of the United States, and in the Arctic and Antarctic regions.

The Department of the Navy already has a long-range program underway for the application of nuclear power to surface ships, as well as submarines. As a part of this program the best uses of nuclear power in the field of ship propulsion must be determined, considering, on one hand, the desirability of a fleet of nuclear powered ships, and on the other hand, the availability of construction facilities and necessary skills, the necessity for any particular type, and the costs involved. To date 19 nuclear-powered submarines and 2 nuclear-powered surface ships have been approved and funds appropriated for their construction.

Preliminary design studies of a nuclear-powered Navy icebreaker have been conducted and such a ship would have some worthwhile military advantages. However, construction of a nuclear-powered ship requires specialized skills and techniques, and even though every effort is being made to expand our facilities and improve our techniques, all of our available resources for the immediate future should be utilized to progress toward the highest priorities in this field. Enactment of this bill might well delay the construction of other nuclear-powered vessels having a much higher priority and, therefore,

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it appears that the introduction of H. R. 9196 is premature. Accordingly, the Department of the Navy, on behalf of the Department of Defense, opposes the enactment of H. R. 9196.

The last sentence of H. R. 9196 provides that the Treasury Department may avail itself of the use of licenses, information, services, facilities, offices, and employees of any other agency of the Government. If this bill be enacted, it is recommended that this provision be amended to require the prior approval of the agency or agencies from which assistance would be sought.

This report has been coordinated within the Department of Defense in accordance with procedures prescribed by the Secretary of Defense.

The Department of the Navy has been advised by the Bureau of the Budget that there is no objection to the submission of this report on H. R. 9196 to the Congress.

For the Secretary of the Navy.

Sincerely yours,

E. C. STEPHAN,
Rear Admiral, United States Navy,
Chief of Legislative Liaison.

TREASURY DEPARTMENT,
Washington, January 15, 1958.

Hon. HERBERT C. BONNER,
Chairman, Committee on Merchant Marine and Fisheries,
House of Representatives, House Office Building,
Washington, D. C.

MY DEAR MR. CHAIRMAN: Reference is made to the request of your committee for the views of the Treasury Department on H. R. 9196, a bill to authorize the construction of a nuclear-powered icebreaking vessel for operation by the United States Coast Guard, and for other purposes.

The purpose of this bill is to authorize the appropriation of funds to construct and prepare for operation, by the Coast Guard, of a nuclear-powered icebreaking vessel. The collaboration and contracting for special services of persons or firms, civil and governmental, is permitted.

The Coast Guard is very interested in all aspects of development of nuclear power for the propulsion of vessels. However, in programing its needs for vessels of the many types which are required, including smaller types as well as cutters, there is not a present project for a vessel of the type suggested by the proposed legislation.

It is felt that the suggestion embodied in the bill might better fit the Coast Guard program at a later date and for that reason the Treasury Department does not favor the enactment of H. R. 9196 at the present time. This does not in any way negate the keen interest which both the Department and the Coast Guard have in the subject and in closely following such research and such development as is presently going on and will in the immediate future.

The Department has been advised by the Bureau of the Budget that there is no objection to the submission of this report to your committee.

Sincerely yours,

A. GILMORE FLUES,
Acting Secretary of the Treasury.

ATOMIC ENERGY COMMISSION,
Washington, D. C., January 20, 1958.

Hon. HERBERT C. BONNER,
Chairman, Committee on Merchant Marine and Fisheries,
House of Representatives.

DEAR MR. BONNER: In your letter of August 9, 1957, you requested the views and recommendations of the Atomic Energy Commission with regard to H. R. 9196, to authorize the construction of a nuclear-powered icebreaking vessel for operation by the United States Coast Guard, and for other purposes. We are happy to furnish the following report.

The bill would authorize the appropriation to the Treasury Department, the Coast Guard, and the Atomic Energy Commission, of sums required for constructing and outfitting the proposed vessel and preparing it for operation, including training qualified personnel.

The Atomic Energy Commission, of course, is unable to advise you whether the Coast Guard will require the services of an additional icebreaker. We do feel, however, that if such a vessel will be needed, it would be not only feasible, but advantageous as well, to use a nuclear plant as a source of power. The reasons for this conviction are stated below.

In the performance of its tasks, an icebreaker might be required to spend prolonged periods of time at sea at high power output without opportunity for refueling. The use of nuclear fuel could meet this requirement in a superior fashion.

Likewise, nuclear power, since its weight change is less sensitive to increased power output, might result in a more efficient vessel as this characteristic of an icebreaker is a function of power per unit displacement.

Moreover, if sufficient time were allowed for research and development, the development and operation of the nuclear propulsion might contribute materially to the advancement of reactor technology.

The proposed icebreaker would probably be more expensive to construct than a conventionally powered ship. However, in view of the offsetting considerations stated above, the utilization of a nuclear powerplant would appear to afford an excellent opportunity to demonstrate a peaceful use of atomic energy in a practical application. Accordingly, if the services of an additional icebreaker are required, we would recommend favorable consideration of H. R. 9196.

The Bureau of the Budget has advised us that it has no objection to the submission of the report.

Sincerely yours,

K. E. FIELDS, *General Manager.*

THE SECRETARY OF COMMERCE,
Washington, January 21, 1958.

Hon. HERBERT C. BONNER,
Chairman, Committee on Merchant Marine and Fisheries,
House of Representatives, Washington, D. C.

DEAR MR. CHAIRMAN: This is in reply to your request of August 9, 1957, for the views of this Department with respect to H. R. 9196, a bill to authorize the construction of a nuclear-powered icebreaking

vessel for operation by the United States Coast Guard, and for other purposes.

The bill (in language similar to that of Public Law 848, 84th Cong., authorizing the nuclear-powered merchant vessel) would authorize to be appropriated to the Treasury Department, United States Coast Guard, and the Atomic Energy Commission, sums necessary for the construction, outfitting, and preparation for operation, of a nuclear-powered icebreaking vessel capable of operation in icebound waters of the United States and the Arctic and Antarctic regions.

There may be some advantages to the American merchant marine from the construction and operating experience of a nuclear-powered icebreaker. While the operation of such a vessel would not be directly comparable to commercial transport, the application of nuclear power to propulsion of such a vessel should afford an opportunity for testing such propulsion in extended operation under rigorous conditions without dependence on an outside fuel supply, and without involving the risks of commercial transport of passengers and cargo.

Russia has launched a nuclear-powered icebreaker.

It is understood that the Treasury Department has its own technical organization for design and construction of its special purpose ships. We defer to the views of that department in respect of the specific need for the proposed construction.

The Bureau of the Budget has advised that it would interpose no objection to the submission of this letter to your committee.

Sincerely yours,

LOUIS S. ROTHSCHILD,
Acting Secretary of Commerce.

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DOCUMENTS EXPEDITING PROJECT

[No. 3]

REPORTS FROM THE DEPARTMENT OF COMMERCE, GENERAL ACCOUNTING OFFICE, DEPARTMENT OF THE NAVY, AND ATOMIC ENERGY COMMISSION, ON H. R. 9342, H. R. 9473, AND IDENTICAL BILLS, AND A SIMILAR BILL, H. R. 9654, TO AUTHORIZE THE CONSTRUCTION AND SALE BY THE FEDERAL MARITIME BOARD OF A SUPERLINER PASSENGER VESSEL EQUIVALENT TO THE STEAMSHIP "UNITED STATES." ALSO, REPORTS FROM THE DEPARTMENT OF THE NAVY AND THE GENERAL ACCOUNTING OFFICE ON H. R. 9432, TO AUTHORIZE THE CONSTRUCTION AND SALE BY THE FEDERAL MARITIME BOARD OF A PASSENGER VESSEL FOR OPERATION IN THE PACIFIC OCEAN

THE SECRETARY OF COMMERCE,
Washington, February 4, 1958.

Hon. HERBERT C. BONNER,
Chairman, Committee on Merchant Marine and Fisheries,
House of Representatives, Washington, D. C.

DEAR MR. CHAIRMAN: This letter is in reply to your request of August 22, 1957, for the views of this Department with respect to H. R. 9342, a bill to authorize the construction and sale by the Federal Maritime Board of a superliner passenger vessel equivalent to the steamship *United States*.

The bill declares the necessity for the construction of a superliner passenger vessel equivalent to the steamship *United States* to replace the steamship *America*, which will be 20 years old by 1960, for operation on an essential trade route in the North Atlantic. It authorizes the appropriation to the Department of Commerce of the necessary sums for the construction of such a superliner passenger vessel and authorizes the Federal Maritime Board to enter into a contract for the sale of the vessel upon completion to the United States Lines Co., the present owner and operator of the steamship *United States* and the steamship *America*, for a specified price of $47 million, payment of the purchase price to be as provided in the 1936 act (25 percent down and payment of the balance within a 20-year period).

The Department of Commerce is in accord with the objective of the legislation and believes that construction of such a superliner passenger vessel with the contemplated characteristics and features would be desirable, but believes that the vessel should be constructed under the provisions of the Merchant Marine Act, 1936, as amended, and the administration budgetary policy which calls for private financing of the purchaser's portion of the cost, with Government aid as to that portion limited to Government insurance of the private loan and mortgage under title XI of the 1936 act (which authorizes insurance of private loans and mortgages with principal amounts not exceeding 75 percent of the cost of the vessel to the purchaser).

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The 1936 act provides for subsidizing the construction of vessels for operation on the essential foreign trade routes of the United States in an amount not exceeding 50 percent of the domestic construction cost of the vessel and provides for the full payment by the United States of the cost of national defense features incorporated in the vessel. The Department of Defense examines and passes upon the suitability of new vessels for use in national defense. The vessel would, of course, provide troop- and material-carrying capacity in event of war or national emergency.

It may be that the specified sales price of $47 million is less than the portion of the cost of the vessel which should be borne by the purchaser under the 1936 act. It would be unfortunate to set a precedent for a specified statutory determination in lieu of the administrative determination and computation of the construction-differential subsidy and the cost of national defense features in accord with the provisions of the 1936 act.

While the Department believes in the desirability of a prompt replacement of the steamship *America*, it is believed that the vessel should be provided in accord with the policy and provisions of the 1936 act, and that this will best serve the interests of the Government in furnishing the assistance contemplated under the contract of the United States Lines Co. to replace the steamship *America*.

The Department recommends authorization of the necessary appropriations to provide for the prompt replacement of the steamship *America* and recommends to this end that the bill be amended as follows:

Page 2, strike out all of lines 1 through 24 and insert in lieu thereof the following: "payment of construction-differential subsidy and cost of national defense features incident to the construction, outfitting, and equipping of such a superliner passenger vessel pursuant to section 504 of the Merchant Marine Act, 1936, as amended."

The Director, Bureau of the Budget, has advised that there would be no objection to the submission of this report. The Budget Bureau further advises that the Bureau believes that it would be desirable to build this ship at the appropriate time under the wholly adequate provisions of existing law which authorize payment of a construction subsidy and provide for private financing with Federal insurance of the ship mortgage. However, in this particular case, the Budget Bureau does not object to special legislation incorporating those features of the Merchant Marine Act, 1936, subject to the understanding that enactment of such legislation would not be construed as conferring a priority for appropriations for the ship without regard to other scheduled ship construction. Enactment of legislation requiring Federal financing of the ship mortgage as proposed by H. R. 9342 would not be in accord with the program of the President.

This letter applies to the bills H. R. 9351, H. R. 9473, and H. R. 9576, which are of the same, or similar, text as H. R. 9342.

Sincerely yours,

SINCLAIR WEEKS,
Secretary of Commerce.

COMPTROLLER GENERAL OF THE UNITED STATES,
Washington, September 4, 1957.

B–130963.

Hon. HERBERT C. BONNER,
Chairman, Committee on Merchant Marine and Fisheries,
House of Representatives.

DEAR MR. CHAIRMAN: Further reference is made to your letter of August 20, 1957, acknowledged on August 21, requesting the comments of the General Accounting Office concerning H. R. 9342, 85th Congress, 1st session, entitled "A bill to authorize the construction and sale by the Federal Maritime Board of a superliner passenger vessel equivalent to the steamship *United States.*"

The proposed bill would authorize the Federal Maritime Board to accept, at its discretion, an outstanding bid from a United States shipbuilder for the construction of a vessel equivalent to the *United States* and to make a concurrent contract with the United States Lines Co. for the sale of the completed vessel, fully equipped and outfitted, for the fixed price of $47 million payable under the terms and conditions provided in sections 502 (c) and 503 of the Merchant Marine Act, 1936, as amended. The difference between the construction cost of the vessel, excluding national-defense features, and $47 million, would be "construction-differential subsidy" for purposes of the Merchant Marine Act, 1936, as amended, the provisions of which would govern construction and sale of the vessel except as provided otherwise in the bill.

The presently outstanding low bid is that of New York Shipbuilding Corp. at $109,436,289, excluding a fin stabilization system. Certain items of outfit and equipment not included in the bid specifications are estimated to cost about $2 million, so that the February 1957 base month cost of the vessel would be about $111.5 million. Inclusion of a fin stabilization system would increase this amount by about $2.5 million. If escalation were to average 5 percent per year until delivery, and allowing something over 3 years for building, the total cost of the vessel without fins would be between $125 million and $130 million, exclusive of the costs of any changes and extras which might be found desirable. Under the terms of the proposed bill the cost of such changes and extras would be borne entirely by the Government, whereas under the 1936 act it would be shared between Government and owner in the construction-differential subsidy ratio for all items not classed as national-defense features.

It reasonably may be assumed that the "construction cost" mentioned in line 23, page 2, of the bill is intended to mean the total cost of the ship to the Government on delivery from the builder, including the cost of all items not included in the builder's bid but excluding that portion of such total cost as is determined tor epresent national-defense features. However, it is suggested that the Congress may desire to consider the advisability of clarifying this feature of the bill.

We have no knowledge as to the basis on which the fixed price of $47 million was determined. However, such price in effect replaces

(1) "the fair and reasonable estimate of cost * * * in a foreign shipbuilding center * * * and (2) would exceed the 50 percent limitation of section 502 (b) and, to this extent, would deviate from the authorization presently provided in the Merchant Marine Act of 1936, as amended."

The bill makes no provision for adjustments in the purchase price in the event the owner finds it desirable at some future time to operate the vessel in commercial service at speeds higher than those established at the time of purchase which are the basis on which the cost of the speed component of national features is computed. Such adjustments, to reflect the commercial value of the use of extra speed and other national-defense features, have been provided for in recent contracts for the acquisition of vessels with Government participation.

The proposed legislation would also preclude private financing of the unpaid balance of the owner's cost, replacing it with the provisions of section 502 (c) and 503 which provide for Government financing through preferred mortgages payable in 20 years with interest at 3½ percent per annum. The effect of this would be to require appropriation for the total cost of the vessel less the owner's downpayment of 25 percent; whereas under private financing, appropriation would be necessary only for the sum representing construction-differential subsidy and national-defense features. Assuming a downpayment by the United States Lines Co. of about $12 million (25 percent of $47 million), the increased appropriation would amount to approximately $35 million. In pursuance of the policy followed by Maritime Administration in the past several years, recent agreements for the construction and purchase of vessels have provided for private financing with the mortgage held by the financing institution being insured by the Government under title XI of the Merchant Marine Act, 1936, as amended. We understand that the interest rates on these mortgages are considerably higher than the 3½ percent charged under the Government preferred mortgages.

We recognize that the proposed bill is the result of special circumstances—the background of which indicates that the cost of replacing the steamship *America* under existing provisions of the Merchant Marine Act of 1936, as amended, with a vessel equivalent to the steamship *United States* is not commercially feasible. On the other hand, its enactment may nevertheless serve as a precedent for similar proposals for the construction of vessels and their sales at fixed prices in lieu of estimated foreign costs, or for other deviations from basic provisions of the act, based on contentions of equally justifiable special circumstances. We also recognize that the question of whether special legislation of this type, granting Government aid in excess of that presently authorized, is necessary to the national interest is strictly a matter of policy for determination by the Congress, on which we express no opinion. We would suggest, however, that the matters hereinabove set forth be given serious consideration by your committee in its deliberations on the bill.

Sincerely yours,

JOSEPH CAMPBELL,
Comptroller General of the United States.

COMPTROLLER GENERAL OF THE UNITED STATES,
Washington, September 5, 1957.

B–130963.

Hon. HERBERT C. BONNER,
Chairman, Committee on Merchant Marine and Fisheries,
House of Representatives.

DEAR MR. CHAIRMAN: Further reference is made to your letter of August 28, 1957, acknowledged on August 29, requesting the comments of the General Accounting Office concerning H. R. 9473, 85th Congress, 1st session, entitled "A bill to authorize the construction and sale by the Federal Maritime Board of a superliner passenger vessel equivalent to the steamship *United States*."

This bill is similar to H. R. 9342, 85th Congress, 1st session, which was the subject of our comments to your committee in a letter dated September 4, 1957, a copy of which is enclosed. The difference, however, between the two bills is that H. R. 9342 authorizes the Federal Maritime Board to accept, at its discretion, an outstanding bid from a United States shipbuilder, while the present bill, H. R. 9473, merely authorizes the entering into a contract with the shipbuilder for the construction of such vessel. In the event, therefore, that the latter bill contemplates a readvertisement and solicitation of new bids, it is suggested that this phase of the matter be clarified.

Like H. R. 9342, the present bill would authorize the Federal Maritime Board to make a concurrent contract with the United States Lines Co. for the sale of the completed vessel, fully equipped and outfitted, for the fixed price of $47 million payable under the terms and conditions provided in sections 502 (c) and 503 of the Merchant Marine Act, 1936, as amended. The difference between the construction cost of the vessel, excluding national defense features, and $47 million, would be "construction differential subsidy" for purposes of the Merchant Marine Act, 1936, as amended, the provisions of which would govern construction and sale of the vesesl except as provided otherwise in the bill.

It reasonably may be assumed that the "construction cost" menioned in line 18, page 2, of the bill is intended to mean the total cost of the ship to the Government on delivery from the builder, including the cost of all items not included in the builder's bid but excluding that portion of such total cost as determined to represent national defense features. However, it is suggested that the Congress may desire to consider the advisability of clarifying this feature of the bill.

We have no knowledge as to the basis on which the fixed price of $47 million was determined. However, such price in effect replaces (1) "the fair and reasonable estimate of cost * * * in a foreign shipbuilding center * * *" and (2) would exceed the 50 percent limitation of section 502 (b) and, to this extent, would deviate from the authorization presently provided in the Merchant Marine Act of 1936, as amended.

The bill makes no provision for adjustments in the purchase price in the event the owner finds it desirable at some future time to operate the vessel in commercial service at speeds higher than those established

at the time of purchase which are the basis on which the cost of the speed component of national defense features is computed. Such adjustments, to reflect the commercial value of the use of extra speed and other national defense features, have been provided for in recent contracts for the acquisition of vessels with Government participation.

The proposed legislation would also preclude private financing of the unpaid balance of the owner's cost, replacing it with the provisions of section 502 (c) and 503 which provide for Government financing through preferred mortgages payable in 20 years with interest at 3½ percent per annum. The effect of this would be to require appropriation for the total cost of the vessel less the owner's downpayment of 25 percent; whereas under private financing, appropriation would be necessary only for the sum representing construction differential subsidy and national defense features. Assuming a downpayment by the United States Lines Co. of about $12 million (25 percent of $47 million), the increased appropriation would amount to approximately $35 million. In pursuance of the policy followed by Maritime Administration in the past several years, recent agreements for the construction and purchase of vessels have provided for private financing with the mortgage held by the financing institution being insured by the Government under Title XI of the Merchant Marine Act, 1936, as amended. We understand that the interest rates on these mortgages are considerably higher than the 3½ percent charged under the Government preferred mortgages.

We recognize that the proposed bill is the result of special circumstances—the background of which indicates that the cost of replacing the steamship *America* under existing provisions of the Merchant Marine Act of 1936, as amended, with a vessel equivalent to the steamship *United States* is not commercially feasible. On the other hand, its enactment may nevertheless serve as a precedent for similar proposals for the construction of vessels and their sales at fixed prices in lieu of estimated foreign cost, or for other deviations from basic provisions of the act, based on contentions of equally justifiable special circumstances. We also recognize that the question of whether special legislation of this type, granting Government aid in excess of that presently authorized, is necessary to the national interest is strictly a matter of policy for determination by the Congress, on which we express no opinion. We would suggest, however, that the matters hereinabove set forth be given serious consideration by your committee in its deliberations on the bill.

Sincerely yours,

JOSEPH CAMPBELL,
Comptroller General of the United States.

DEPARTMENT OF THE NAVY,
OFFICE OF THE SECRETARY,
OFFICE OF LEGISLATION,
Washington, D. C., February 3, 1958.

Hon. HERBERT C. BONNER,
Chairman, Committee on Merchant Marine and Fisheries,
House of Reresentatives, Washington, D. C.

MY DEAR MR. BONNER: Your requests for comment on H. R. 9342 and H. R. 9473, similar bills to authorize the construction and sale

by the Federal Maritime Board of a superliner passenger vessel equivalent to the steamship *United States* have been referred to this Department by the Secretary of Defense for the preparation of a report expressing the views of the Department of Defense.

The purpose of the bills is to authorize the Federal Maritime Board to contract for the construction of a superliner passenger vessel equivalent to the steamship *United States*, to replace the steamship *America* for operation in the North Atlantic. The Board would be authorized to contract for the sale of said vessel, upon its completion, to the United States Lines for the fixed price of $47 million.

Construction of this new ship would represent an important step forward in the current program for replacement of obsolescent passenger vessels. The proposed vessel would be suitable for speedy and economical conversion into a naval or military auxiliary, and would provide additional troop carrying capacity required in event of war or national emergency.

The financial arrangements of the construction are under the jurisdiction of the Federal Maritime Board and the Department of Commerce. The Department of the Navy, on behalf of the Department of Defense, defers to those agencies with respect to financial aspects of the bill.

The Department of Defense favors the construction of a sister ship to the steamship *United States* as a replacement to the steamship *America*. Subject to the views of the Department of Commerce with respect to the financial aspects of the bills, the Department of the Navy, on behalf of the Department of Defense, favors the enactment of H. R. 9342 and H. R. 9473.

This report has been coordinated within the Department of Defense in accordance with procedures prescribed by the Secretary of Defense.

The Department of the Navy has been advised by the Bureau of the Budget that while there is no objection to the submission of this report to the Congress, the Bureau of the Budget believes that it would be desirable to build this ship at the appropriate time under the wholly adequate provisions of existing law which authorize payment of a construction subsidy and provide for private financing, with Federal insurance, of the ship mortgage. However, in this particular case, the Bureau of the Budget does not object to special legislation incorporating these features of the Merchant Marine Act, subject to the understanding that enactment of such legislation would not be construed as conferring a priority for appropriations for the ship without regard to other scheduled ship construction. The Bureau of the Budget has further advised that enactment of legislation requiring Federal financing of the ship mortgage, as proposed by H. R. 9342, would not be in accord with the program of the President.

Sincerely yours,

E. C. STEPHAN,
Rear Admiral, United States Navy,
Chief of Legislative Liaison
(For the Secretary of the Navy).

THE SECRETARY OF COMMERCE,
Washington 25, February 4, 1958.

Hon. HERBERT C. BONNER,
Chairman, Committee on Merchant Marine and Fisheries,
House of Representatives, Washington, D. C.

DEAR MR. CHAIRMAN: This letter is in reply to your request of January 13, 1958, for the views of this Department with respect to H. R. 9654, a bill to authorize the construction and sale by the Federal Maritime Board of a superliner passenger vessel equivalent to the steamship *United States*.

The bill declares the necessity for the construction of a superliner passenger vessel equivalent to the steamship *United States*, but with nuclear propulsion, to replace the steamship *America*, which will be 20 years old by 1960, for operation on an essential trade route in the North Atlantic. It authorizes the appropriation to the Department of Commerce of the necessary sums for the construction of such a superliner passenger vessel and authorizes the Federal Maritime Board to enter into a contract for the sale of the vessel upon completion to the United States Lines Co., the present owner and operator of the steamship *United States* and the steamship *America*, for a specified price of $47 million, payment of the purchase price to be as provided in the 1936 act (25 percent down and payment of the balance within a 20-year period).

The Department of Commerce is in accord with the objective of the legislation and believes that construction of such a superliner passenger vessel with the contemplated characteristics and features would be desirable, but believes that the vessel should be constructed under the provisions of the Merchant Marine Act, 1936, as amended, and the administration budgetary policy which calls for private financing of the purchaser's portion of the cost, with Government aid as to that portion limited to Government insurance of the private loan and mortgage under title XI of the 1936 act (which authorizes insurance of private loans and mortgages with principal amounts not exceeding 75 percent of the cost of the vessel to the purchaser).

The 1936 act provides for subsidizing the construction of vessels for operation on the essential foreign trade routes of the United States in an amount not exceeding 50 percent of the domestic construction cost of the vessel and provides for the full payment by the United States of the cost of national-defense features incorporated in the vessel. The Department of Defense examines and passes upon the suitability of new vessels for use in national defense. The vessel would, of course, provide troop and material carrying capacity in event of war or national emergency.

It may be that the specified sales price of $47 million is less than the portion of the cost of the vessel which should be borne by the purchaser under the 1936 act. It would be unfortunate to set a precedent for a specified statutory determination in lieu of the administrative determination and computation of the construction-differential subsidy and the cost of national-defense features in accord with the provisions of the 1936 act.

The bill specifically provides that the new vessel shall be equipped with nuclear propulsion. The purpose, the bill states, is to make the vessel competitive during its useful life and to prevent premature obsolescence. In view of the construction of the nuclear-powered

nuclearship *Savannah* to be ready in 1960, the economic noncompetitiveness of present nuclear-propulsion plants as compared with conventional powerplants, and the likelihood that nuclear research and experiment would make a currently constructed powerplant obsolete before the end of the useful life of the new ship, the Department recommends against the use of nuclear propulsion in this vessel.

While the Department believes in the desirability of a prompt replacement of the steamship *America*, it is believed that the vessel should be provided in accord with the policy and provisions of the 1936 act, and that this will best serve the interests of the Government in furnishing the assistance contemplated under the contract of the United States Lines Co. to replace the steamship *America*.

The Department recommends authorization of the necessary appropriations to provide for the prompt replacement of the steamship *America* and recommends that, if the committee adopts this bill, it be amended as follows:

Page 1, lines 8 to 10, strike out the last sentence.

Page 2, strike out all of lines 3 through 24 and insert in lieu thereof the following:

available until expended, for the payment of construction-differential subsidy and cost of national-defense features incident to the construction, outfitting, and equipping of such a superliner passenger vessel pursuant to section 504 of the Merchant Marine Act, 1936, as amended.

Page 3, strike out lines 1 to 7.

The Director, Bureau of the Budget, has advised that there would be no objection to the submission of this report. The Budget Bureau further advises that the Bureau believes that it would be desirable to build this ship at the appropriate time under the wholly adequate provisions of existing law which authorize payment of a construction subsidy and provide for private financing with Federal insurance of the ship mortgage. However, in this particular case, as in the case of H. R. 9342, the Budget Bureau does not object to special legislation incorporating these features of the Merchant Marine Act, 1936, subject to the understanding that enactment of such legislation would not be construed as conferring a priority for appropriations for the ship without regard to other scheduled ship construction. Enactment of legislation requiring Federal financing of the ship mortgage as proposed by H. R. 9654 would not be in accord with the program of the President.

Sincerely yours,

SINCLAIR WEEKS,
Secretary of Commerce.

COMPTROLLER GENERAL OF THE UNITED STATES,
Washington 25, January 31, 1958.

B–130963.

Hon. HERBERT C. BONNER,
Chairman, Committee on Merchant Marine and Fisheries,
House of Representatives.

DEAR MR. CHAIRMAN: Further reference is made to your letter of January 13, 1958, acknowledged on January 14, requesting the comments of the General Accounting Office concerning H. R. 9654, 85th Congress, 2d session, entitled "A bill to authorize the construction

and sale by the Federal Maritime Board of a superliner passenger vessel equivalent to the steamship *United States*."

This bill is similar to H. R. 9342 and H. R. 9473, 85th Congress, 1st session, which were subjects of our comments to your committee in letters dated September 4 and 5, 1957, respectively, copies of which are enclosed.

As in H. R. 9342 and H. R. 9473, the present bill would authorize the Federal Maritime Board to contract for the sale of a superliner, fully outfitted and equipped, upon its completion to the United States Lines Co. for the fixed price of $47 million, payable under the terms and conditions provided in sections 502 (c) and 503, Merchant Marine Act, 1936, as amended, concurrently with entering into a construction contract with the shipbuilder. The difference between the construction cost of the vessel, excluding national defense features, and $47 million would be construction-differential subsidy for the purpose of the 1936 act, the provisions of which would govern the construction and sale of the superliner except as otherwise provided in the bill.

Unlike both previous bills, H. R. 9654 provides that the vessel shall be equipped with nuclear propulsion. Although nuclear-powered merchant ships may be technically feasible, it is not ascertainable by us whether the first ships will be economically competitive with conventionally powered vessels. It is understood that the Atomic Energy Commission and the Maritime Administration are jointly engaged in a program to develop nuclear propulsion for commercial shipping and to construct the first nuclear-powered merchant ship, the nuclearship *Savannah;* however, it also is our understanding that the program still appears to be in the research and development stage, and no doubt the Atomic Energy Commission and the Maritime Administration will be in a position to advise your committee in detail the results of its studies.

We understand that the United States Lines Co. has determined that it cannot pay more than $47 million based on projections of revenues, operating costs, and operating differential subsidy for a conventionally powered superliner similar to the steamship *United States*, but in the instant case we are not in a position to ascertain what effect nuclear propulsion would have upon operating results.

Unlike both previous bills, H. R. 9654 also provides that the Maritime Administration may engage specialists and avail itself, with the approval of the Secretary of Commerce, of benefits which may be derived from other Government agencies in carrying on the activities and functions under the proposed act. Since the appropriation authorization under section 1 of the bill is limited to the construction, outfitting, and equipping of such vessel, it may be desirable to indicate whether the cost of these services and benefits are intended to be included in such authorization or are to be financed from other funds.

Again, unlike H. R. 9342, the present bill does not expressly authorize the Federal Maritime Board to have such a vessel constructed without further bidding, under outstanding bids which have previously been made by United States shipbuilders on a similar vessel. The New York Shipbuilding Corp. made the low bid of $109,436,289 in March 1957 for a conventionally powered vessel, exclusive of a fin-stabilization system and certain items of outfit and equipment. But we have no information on the estimated total cost of such a ship to the Government upon completion at the present time, nor on the probable additional cost for nuclear propulsion.

We assume that the words "construction cost" on line 6, page 3, of the bill is intended to mean the total cost of the ship to the Government on delivery from the builder, including the cost of all items not included in the builder's bid but excluding that portion of such total cost as is determined to represent national defense features.

The fixed price in effect replaces (1) "the fair and reasonable estimate of cost * * * in a foreign shipbuilding center * * *" required by section 502 (b), Merchant Marine Act, 1936, as amended. In our letter of September 4, 1957, to your committee, reporting on H. R. 9342, we estimated an ultimate cost of between $125 million and $130 million, exclusive of charges and extras for the conventionally powered type of superliner on which the New York Shipbuilding Corp. was the low bidder. However, the cost probably will be higher by the inclusion of nuclear propulsion. In any event, it seems implicit in the proposed fixed sales price of $47 million that the amount of construction differential subsidy would exceed the 50 percent limitation of section 502 (b) of the act.

The proposed legislation also would preclude private financing of the unpaid balance of the owner's cost, replacing it with the provisions of sections 502 (c) and 503 which provide for Government financing through preferred mortgages payable in 20 years with interest at 3½ percent per annum. The effect of this would be to require appropriation for the total cost of the vessel less the owner's downpayment of 25 percent; whereas, under private financing, appropriation would be necessary only for the sum representing construction differential subsidy and national defense features. Assuming a downpayment by the United States Lines Co. of about $12 million (25 percent of $47 million), the increased appropriation would amount to approximately $35 million. In pursuance of the policy followed by Maritime Administration in the past several years, recent agreements for the construction and purchase of vessels have provided for private financing with the mortgage held by the financing institution being insured by the Government under title XI of the Merchant Marine Act, 1936, as amended. We understand that the interest rates on these mortgages are considerably higher than the 3½ percent charged under the Government preferred mortgages.

We recognize that the proposed bill is the result of special circumstances—the background of which indicates that the cost of replacing the Steamship *America* under existing provisions of the Merchant Marine Act of 1936, as amended, with a vessel equivalent to the Steamship *United States* is not commercially feasible. On the other hand, its enactment may nevertheless serve as a precedent for similar proposals for the construction of vessels and their sales at fixed prices in lieu of estimated foreign cost, or for other deviations from basic provisions of the act, based on contentions of equally justifiable special circumstances. We also recognize that the question of whether special legislation of this type, granting Government aid in excess of that presently authorized, is necessary to the national interest is strictly a matter of policy for determination by the Congress, on which we express no opinion. We would suggest, however, that the matters hereinabove set forth be given serious consideration by your committee in its deliberations on the bill.

Sincerely yours,

JOSEPH CAMPBELL,
Comptroller General of the United States.

COMPTROLLER GENERAL OF THE UNITED STATES,
Washington 25, September 4, 1957.

B–130963.

Hon. HERBERT C. BONNER,
Chairman, Committee on Merchant Marine and Fisheries,
House of Representatives.

DEAR MR. CHAIRMAN: Further reference is made to your letter of August 20, 1957, acknowledged on August 21, requesting the comments of the General Accounting Office concerning H. R. 9342, 85th Congress, 1st session, entitled "A bill to authorize the construction and sale by the Federal Maritime Board of a superliner passenger vessel equivalent to the steamship *United States*."

The proposed bill would authorize the Federal Maritime Board to accept, at its discretion, an outstanding bid from a United States shipbuilder for the construction of a vessel equivalent to the *United States* and to make a concurrent contract with the United States Lines Co. for the sale of the completed vessel, fully equipped and outfitted, for the fixed price of $47 million, payable under the terms and conditions provided in sections 502 (c) and 503 of the Merchant Marine Act, 1936, as amended. The difference between the construction cost of the vessel, excluding national defense features, and $47 million, would be "construction differential subsidy" for purposes of the Merchant Marine Act, 1936, as amended, the provisions of which would govern construction and sale of the vessel except as provided otherwise in the bill.

The presently outstanding low bid is that of New York Shipbuilding Corp., at $109,436,289, excluding a fin stabilization system. Certain items of outfit and equipment not included in the bid specifications are estimated to cost about $2 million, so that the February 1957 base month cost of the vessel would be about $111,500,000. Inclusion of a fin stabilization system would increase this amount by about $2,500,000. If escalation were to average 5 percent per year until delivery, and allowing something over 3 years for building, the total cost of the vessel without fins would be between $125 million and $130 million, exclusive of the costs of any changes and extras which might be found desirable. (Under the terms of the proposed bill the cost of such changes and extras would be borne entirely by the Government, whereas under the 1936 act it would be shared between Government and owner in the construction differential subsidy ratio for all items not classed as national defense features.)

It reasonably may be assumed that the "construction cost" mentioned in line 23, page 2, of the bill is intended to mean the total cost of the ship to the Government on delivery from the builder, including the cost of all items not included in the builder's bid but excluding that portion of such total cost as is determined to represent national defense features. However, it is suggested that the Congress may desire to consider the advisability of clarifying this feature of the bill.

We have no knowledge as to the basis on which the fixed price of $47 million was determined. However, such price in effect replaces

(1) "the fair and reasonable estimate of cost * * * in a foreign shipbuilding center * * * and (2) would exceed the 50 percent limitation of section 502 (b) and, to this extent would deviate from the authorization presently provided in the Merchant Marine Act of 1936, as amended.

The bill makes no provision for adjustments in the purchase price in the event the owner finds it desirable at some future time to operate the vessel in commercial service at speeds higher than those established at the time of purchase which are the basis on which the cost of the speed component of national features is computed. Such adjustments, to reflect the commercial value of the use of extra speed and other national defense features, have been provided for in recent contracts for the acquisition of vessels with Government participation.

The proposed legislation would also preclude private financing of the unpaid balance of the owner's cost, replacing it with the provisions of section 502 (c) and 503 which provide for Government financing through preferred mortgages payable in 20 years with interest at 3½ percent per annum. The effect of this would be to require appropriation for the total cost of the vessel less the owner's downpayment of 25 percent; whereas under private financing, appropriation would be necessary only for the sum representing construction differential subsidy and national defense features. Assuming a downpayment by the United States Lines Co. of about $12 million (25 percent of $47 million), the increased appropriation would amount to approximately $35 million. In pursuance of the policy followed by Maritime Administration in the past several years, recent agreements for the construction and purchase of vessels have provided for private financing with the mortgage held by the financing institution being insured by the Government under title XI of the Merchant Marine Act, 1936, as amended. We understand that the interest rates on these mortgages are considerably higher than the 3½ percent charged under the Government preferred mortgages.

We recognize that the proposed bill is the result of special circumstances—the background of which indicates that the cost of replacing the steamship *America* under existing provisions of the Merchant Marine Act of 1936, as amended, with a vessel equivalent to the steamship *United States* is not commercially feasible. On the other hand, its enactment may nevertheless serve as a precedent for similar proposals for the construction of vessels and their sales at fixed prices in lieu of estimated foreign cost, or for other deviations from basic provisions of the act, based on contentions of equally justifiable special circumstances. We also recognize that the question of whether special legislation of this type, granting Government aid in excess of that presently authorized, is necessary to the national interest is strictly a matter of policy for determination by the Congress, on which we express no opinion. We would suggest, however, that the matters hereinabove set forth be given serious consideration by your committee in its deliberations on the bill.

Sincerely yours,

JOSEPH CAMPBELL,
Comptroller General of the United States.

COMPTROLLER GENERAL OF THE UNITED STATES,
Washington, September 5, 1957.

B–130963

Hon. HERBERT C. BONNER,
Chairman, Committee on Merchant Marine and Fisheries,
House of Representatives.

DEAR MR. CHAIRMAN: Further reference is made to your letter of August 28, 1957, acknowledged on August 29, requesting the comments of the General Accounting Office concerning H. R. 9473, 85th Congress, 1st session, entitled "A bill to authorize the construction and sale by the Federal Maritime Board of a superliner passenger vessel equivalent to the steamship *United States*."

This bill is similar to H. R. 9342, 85th Congress, 1st session, which was the subject of our comments to your committee in a letter dated September 4, 1957, a copy of which is enclosed. The difference, however, between the two bills is that H. R. 9342 authorizes the Federal Maritime Board to accept, at its discretion, an outstanding bid from a United States shipbuilder, while the present bill, H. R. 9473, merely authorizes the entering into a contract with the shipbuilder for the construction of such vessel. In the event, therefore, that the latter bill contemplates a readvertisement and solicitation of new bids, it is suggested that this phase of the matter be clarified.

Like H. R. 9342, the present bill would authorize the Federal Maritime Board to make a concurrent contract with the United States Lines Co. for the sale of the completed vessel, fully equipped and outfitted, for the fixed price of $47 million payable under the terms and conditions provided in sections 502 (c) and 503 of the Merchant Marine Act, 1936, as amended. The difference between the construction cost of the vessel, excluding national defense features, and $47 million would be "construction differential subsidy" for purposes of the Merchant Marine Act, 1936, as amended, the provisions of which would govern construction and sale of the vessel except as provided otherwise in the bill.

It reasonably may be assumed that the "construction cost" mentioned in line 18, page 2, of the bill is intended to mean the total cost of the ship to the Government on delivery from the builder, including the cost of all items not included in the builder's bid but excluding that portion of such total cost as determined to represent national defense features. However, it is suggested that the Congress may desire to consider the advisability of clarifying this feature of the bill.

We have no knowledge as to the basis on which the fixed price of $47 million was determined. However, such price in effect replaces (1) "the fair and reasonable estimate of cost * * * in a foreign shipbuilding center * * *" and (2) would exceed the 50 percent limitation of section 502 (b) and, to this extent, would deviate from the authorization presently provided in the Merchant Marine Act of 1936, as amended.

The bill makes no provision for adjustments in the purchase price in the event the owner finds it desirable at some future time to operate the vessel in commercial service at speeds higher than those established at the time of purchase which are the basis on which the cost of the speed component of national defense features is computed. Such

adjustments, to reflect the commercial value of the use of extra speed and other national defense features, have been provided for in recent contracts for the acquisition of vessels with Government participation.

The proposed legislation would also preclude private financing of the unpaid balance of the owner's cost, replacing it with the provisions of sections 502 (c) and 503 which provide for Government financing through preferred mortgages payable in 20 years with interest at 3½ percent per annum. The effect of this would be to require appropriation for the total cost of the vessel less the owner's downpayment of 25 percent; whereas under private financing, appropriation would be necessary only for the sum representing construction differential subsidy and national defense features. Assuming a downpayment by the United States Lines Co. of about $12 million (25 percent of $47 million), the increased appropriation would amount to approximately $35 million. In pursuance of the policy followed by Maritime Administration in the past several years, recent agreements for the construction and purchase of vessels have provided for private financing with the mortgage held by the financing institution being insured by the Government under title XI of the Merchant Marine Act, 1936, as amended. We understand that the interest rates on these mortgages are considerably higher than the 3½ percent charged under the Government preferred mortgages.

We recognize that the proposed bill is the result of special circumstances—the background of which indicates that the cost of replacing the steamship *America* under existing provisions of the Merchant Marine Act of 1936, as amended, with a vessel equivalent to the steamship *United States* is not commercially feasible. On the other hand, its enactment may nevertheless serve as a precedent for similar proposals for the construction of vessels and their sales at fixed prices in lieu of estimated foreign cost, or for other deviations from basic provisions of the act, based on contentions of equally justifiable special circumstances. We also recognize that the question of whether special legislation of this type, granting Government aid in excess of that presently authorized, is necessary to the national interest is strictly a matter of policy for determination by the Congress, on which we express no opinion. We would suggest, however, that the matters hereinabove set forth be given serious consideration by your committee in its deliberations on the bill.

Sincerely yours,

JOSEPH CAMPBELL,
Comptroller General of the United States.

DEPARTMENT OF THE NAVY,
OFFICE OF THE SECRETARY,
OFFICE OF LEGISLATIVE LIAISON,
Washington 25, D. C., February 4, 1958.

Hon. HERBERT C. BONNER,
Chairman, Committee on Merchant Marine and Fisheries,
House of Representatives, Washington 25, D. C.

MY DEAR MR. CHAIRMAN: Your request for comment on H. R. 9654, a bill to authorize the construction and sale by the Federal Maritime Board of a superliner passenger vessel equivalent to the steamship *United States*, has been referred to this Department by the

Secretary of Defense for the preparation of a report thereon expressing the views of the Department of Defense.

The purpose of this bill is to authorize the Federal Maritime Board to contract for the construction of a superliner passenger vessel equivalent to the steamship *United States*, to replace the steamship *America* for operation in the North Atlantic. The Board would be authorized to contract for the sale of said vessel, upon its completion, to the United States Lines for the fixed price of $47 million. It is further specified in this bill that this superliner passenger vessel be equipped with nuclear propulsion in order to render it competitive during its useful life and to prevent premature obsolescence.

Construction of a new superliner passenger vessel equivalent to the steamship *United States* would represent an important step forward in the current program for replacement of obsolescent passenger vessels. Such a vessel would be suitable for speedy and economical conversion into a naval or military auxiliary, and would provide additional troop carrying capacity required in event of war or national emergency. However, ships of this type, with conventional propulsion, are not expected to experience fuel shortages in their planned mobilization use. The much larger cruising radius, characteristic of nuclear propulsion, would therefore be of little mobilization value in the proposed ship. Further, the specialized skills and facilities required for construction of a nuclear powered ship of this size would seriously impair existing programs of higher priority to equip ships with nuclear power.

The statement in the bill that the equipping of this vessel with nuclear power would render it competitive during its useful life and would prevent premature obsolescence is inaccurate and misleading. The cost of installation and operation of shipboard nuclear powerplants is not currently competitive with the cost of powerplants using conventional fuel and is not expected to be competitive for a number of years. By the time nuclear reactor plants can be constructed to provide power at a cost comparable to those of conventionally powered plants, the reactor powerplant proposed for installation in this vessel would be obsolescent. It is considered, therefore, that at no time during its useful life would a nuclear powerplant in this proposed new ship be competitive.

Section 3 of the subject bill provides that the Maritime Administration may avail itself of the use of licenses, information, services, facilities, offices, and employees of any other agency of the Government. It is recommended that this provision be amended to require the prior approval of the agency or agencies from which assistance would be sought.

For the foregoing reasons the Department of the Navy, on behalf of the Department of Defense, opposes the enactment of H. R. 9654 but would strongly support the construction of an identical ship with conventional propulsion.

This report has been coordinated with the Department of Defense in accordance with procedures prescribed by the Secretary of Defense.

The Department of the Navy has been advised by the Bureau of the Budget that there is no objection to the submission of this report on H. R. 9654 to the Congress. The Bureau of the Budget has

further advised that enactment of legislation requiring Federal financing of the ship mortgage, as proposed by H. R. 9654, would not be in accord with the program of the President.

Sincerely yours,

E. C. STEPHAN,
Rear Admiral, United States Navy,
Chief of Legislative Liaison
(For the Secretary of the Navy).

ATOMIC ENERGY COMMISSION,
Washington 25, D. C., February 4, 1958.

Hon. HERBERT C. BONNER,
Chairman, Committee on Merchant Marine and Fisheries,
House of Representatives.

DEAR MR. BONNER: I refer to your letter of January 13 which requested the views of the Atomic Energy Commission with respect to H. R. 9654, a bill to authorize the construction and sale by the Federal Maritime Board of a superliner passenger vessel equivalent to the steamship *United States.*

The Atomic Energy Commission in cooperation with the Maritime Administration has undertaken what we believe to be a balanced program leading toward the eventual development of nuclear powerplants capable of providing economic propulsive power for merchant vessels. The Atomic Energy Commission considers the construction of the nuclear ship *Savannah* a major step in achieving this objective. Likewise, we are mutually engaged in studies of additional merchant nuclear vessels with high hope that improvements can be made, in terms of cost and weight, over the existing pressurized-water plant in the nuclear ship *Savannah.*

A superliner would require a powerplant well in excess of 700 thermal megawatts of power, thereby necessitating the use of several reactors in parallel to provide operating power. This plant would be very expensive and might require that as many as four reactors of identical design be built before an operating prototype had been built and tested.

In a balanced development program, it is necessary that additional ships be built in order to gain early practical constructing and operating experience. It is, however, imperative that this transition to nuclear power be taken in logical steps such that we work with relatively small prototype plants before attempting to extrapolate this information to such a very large vessel as a superliner. Accordingly, while the Commission believes that a vessel such as the superliner passenger vessel proposed in H. R. 9654 could, at some time in the future, fruitfully use nuclear power, it is our belief that a vessel of this complexity could not at the present time "be competitive during its useful life."

The Bureau of the Budget has advised us that it has no objection to the submission of this report.

Sincerely yours,

(Signed) R. W. COOK,
Deputy General Manager.

DEPARTMENT OF THE NAVY,
OFFICE OF THE SECRETARY,
OFFICE OF LEGISLATIVE LIAISON,
Washington 25, D. C., February 3, 1958.

Hon. HERBERT C. BONNER,
Chairman, Committee on Merchant Marine and Fisheries,
House of Representatives, Washington 25, D. C.

MY DEAR MR. CHAIRMAN: Your request for comment on H. R. 9432, a bill to authorize the construction and sale by the Federal Maritime Board of a passenger vessel for operation in the Pacific Ocean has been assigned to this Department by the Secretary of Defense for the preparation of a report thereon expressing the views of the Department of Defense.

This bill would authorize the Federal Maritime Board to contract for the construction of a passenger vessel with capacity of approximately 1,400 persons for operation in the Pacific Ocean. Concurrently, the Board would be authorized to contract for the sale of said vessel, upon its completion, to the American President Lines, Ltd.

Construction of this new ship would represent an important step forward in the current program for replacement of obsolescent passenger vessels. The proposed vessel would provide additional troop-carrying capacity required in the event of war or national emergency.

The Department of the Navy, on behalf of the Department of Defense, favors the construction of such a vessel and accordingly, favors the enactment of H. R. 9432, however, it should be noted that it appears that the Merchant Marine Act, 1936, as amended, already provides the Federal Maritime Board with adequate authority to carry out the purposes of H. R. 9432.

This report has been coordinated within the Department of Defense in accordance with procedures prescribed by the Secretary of Defense.

The Department of the Navy has been advised by the Bureau of the Budget that while there is no objection to the submission of this report, the Bureau of the Budget recommends that H. R. 9432 not be enacted because it is both unnecessary in order to accomplish its purpose and in some of its provisions undesirable. The appropriation for merchant marine ship construction requested in the President's budget for 1959 includes funds for the passenger vessel in the Pacific contemplated by this bill. It is planned that the ship will be constructed under the wholly adequate provisions of existing law which authorize the payment of a construction subsidy and provide for private financing, with Federal insurance, of the ship mortgage. The Bureau of the Budget advises further that enactment of legislation requiring Federal financing of the ship mortgage, as proposed by H. R. 9432, would not be in accord with the program of the President.

Sincerely yours,

E. C. STEPHAN,
Rear Admiral, United States Navy,
Chief of Legislative Liaison
(For the Secretary of the Navy).

COMPTROLLER GENERAL OF THE UNITED STATES,
Washington 25, September 5, 1957.

B–133594.

Hon. HERBERT C. BONNER,
Chairman, Committee on Merchant Marine and Fisheries,
House of Representatives.

DEAR MR. CHAIRMAN: Further reference is made to your letter of August 26, 1957, acknowledged on August 27, requesting the comments of the General Accounting Office concerning H. R. 9432, 85th Congress, 1st session, entitled "A bill to authorize the construction and sale by the Federal Maritime Board of a passenger vessel for operation in the Pacific Ocean."

The bill recites that it is necessary to have a new passenger vessel of approximately 1,400-passenger capacity for operation on an essential trade route in the Pacific Ocean in order to carry out the merchant marine policy declared in the Merchant Marine Act, 1936, as amended. It authorizes the appropriation of such sums as may be necessary therefor and the sale thereof to the American President Lines, Ltd., upon terms and conditions of payment of the purchase price as provided for in sections 502 (c) and 503 of the Merchant Marine Act, 1936, as amended. All other aspects of the transaction would be governed by the Merchant Marine Act, 1936, as amended. The bill, however, would preclude the use of private financing for the unpaid balance of the purchase price, whereas it has been the policy of the Federal Maritime Board in recent construction-differential subsidy transactions to require such private financing and to extend thereto the provisions of title XI of the act if requested. Appropriations for the cost of construction under the proposed bill would, therefore, be greater by the amount of such unpaid balance than if private financing were used. However, we understand that interest and other financing costs payable by the purchaser for private financing are higher than the 3½ percent charged under Government financing.

It is not clear whether it is intended to restrict the proposed vessel to the Pacific Ocean at all times and we accordingly suggest clarification of this point.

Aside from the above, we have no information as to the necessity or desirability of the proposed legislation.

Sincerely yours,

JOSEPH CAMPBELL,
Comptroller General of the United States.

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